THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 10 JUNE, 1928 No. 3

European Forestry

As Seen by an American Forester

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WHILE I had made a previous trip abroad in 1912, upon which I had visited the principal forest regions such as the Black Forest and the Spessarts in Germany, the Juras and the Sihlwald in Switzerland, etc., I found that a summer was all too short to gather sufficient information to permit the making of a true picture. My sabbatical year commencing April 1, 1926 —with the World's Forestry Congress in Rome, April 29 to May 5 as my first objective—gave me time to study methods of forestry administration, education and research more thoroughly, although I feel that I have only scratched the surface.

European Schools

My trip, as may be imagined, was most inspiring. In all, I traveled upward of 17,000 mils, visited 11 countries, 15 forest schools—practically every forest school of first rank in Europe—6 ranger or secondary schools, and 7 forest experiment stations of major grade. In addition to bringing back what seemed to me a ton of literature from the various countries, my notebook and photographs combine to make a lasting record concerning forest practice in those countries whose experience over several centuries furnishes us with such excellent samples.

The old adage runs "absence makes the heart grow fonder." It should also make the vision keener because from long range we can see our own shortcomings much more vividly. As a result of my year of "contemplation from afar" it is quite evident that in America we are leaving the propaganda stage in forestry and that it is high time we undertake a survey of our forestry situation in light of new conditions, not losing sight of the chief objective.

This article which will be continued through the two following issues of THE PAPER INDUSTRY, *is substantially the same as appeared in the July, 1927 special edition of The News Letter published by the New York State College of Forestry at Syracuse University, with some added deductions. It is a report of Dean Franklin Moon's sabbatical year abroad, during which he visited practically all the important forestry projects and forestry schools of Europe. The Dean has written this story for the benefit of those interested in forestry problems of the United States.*

Grateful acknowledgment is hereby made of the courtesy granted us by the New York State Printer in the loan of the halftone illustrations which accompany this article.—Editor.

National Program

Two general observations come to my mind which, although almost axiomatic, might be stressed anew:

1. We must realize more vividly than ever that forestry is an integral part of the national economic program of every progressive country. It would hardly be true or fair to say that the measure of a country's progress could be gauged by the intensiveness of its forestry program, and yet there are numerous instances upon the Continent, of countries which though once wooded, prosperous and of great importance, are now deforested, diminished in size and influence and with a population almost decadent.

Forestry is considerably more than a land problem, important as this may be. Its benefits combine social with economic advantages, for the sum of the forest contributions touches society on every side. Forest areas will not only provide, from soils unsuited to agriculture, raw materials for sawmills and

paper plants; they will also yield material for rolling stock and ties for the upkeep of transportation systems as well as tonnage for income, homes, papers and periodicals—intellectual enjoyment for our citizens—employment and wages, comfort and prosperity to thousands of communities. With such contributions, forestry must indeed be considered an integral part of our national program.

Intensive Silviculture Needed

2. The second observation is that we must stage a revival in the field of silviculture. While in no wise denying our repeated statement that "Better methods of utilization leading to elimination or decrease of waste in forestry industry will greatly prolong the existing supply of standing timber," the long look ahead which the forester must acquire demands that we start immediately a vigorous campaign to increase the production end of our forestry program by planting on a scale hitherto undreamed of, by increasing growth on land already forested without in anywise abating our endeavor for the elimination of waste. In such a campaign we should by no means be content with half measures. While it is perhaps true as the forester in charge of the Heidelberg City Forest told me last December that "within 75 years the American consuming public would thank God for wood cellulose in any form in which they can purchase it," we should raise our sights as high as possible. We should endeavor to grow **as large quantities of the best species possible on every acre of ground unsuited to agriculture and not be content with half yields of the best species or a full stand of mediocre species.**

GATHERING FAGOTS
Close utilization in Holland

BEAUTIFUL VALLOMBROSA FOREST
"Thick as the autumnal leaves that strow the brooks
In Vallombrosa, where the Etrurian shades
High, over-arched, embower"

While forestry as a profession dates back three decades in America, this is only a split-second in comparison with the life and development of other high callings. The forestry movement calls for the best leaders in the land; men of high ideals with a spirit of service—trite words but true as Truth—in order that lands now a waste may be reclothed with a living forest; that mills and towns now abandoned may be rebuilt and hum with industry; that the denizens of the forest may increase and beguile the city-worn and desk weary to the woods for recreation. With over 400 million acres of soil within our boundaries suited only to tree growth; with over 81 million acres of land once forested but through reckless cutting and forest fire now lying idle, the forestry problem is one of first magnitude.

Roosevelt, at the conference of the Governors some 20 years ago, declared the problem of forest conservation to be "the greatest internal problem which the country faced." In view of the inroads which have been made upon our forest capital and the migration of our forest industries since that time, his statement assumes peculiar significance today.

With four-fifths of the timberland in America privately owned, the problem is put squarely up to corporations and individuals who have sufficient initiative, optimism—indeed patriotism, to provide future crops of raw material grown upon their own land to be consumed by their own mills in order that land, mills, employees, and capital may be profitably employed for generations to come.

No industry drawing upon the forest for its raw material is in better position to embark upon such a plan than the paper industry, and if the utterances of leading paper men at the National Commercial Forestry Conference held at Chicago in November, 1927 are any indication, they are ready to lead the way. May they continue in the path and at the pace they have started.

World's Forestry Congress Organizes International Survey

April 3, 1926, I sailed from New York with Dr. C. A. Schenck, former head of the Biltmore School, and his party. My first objective was the World's Forestry Congress at Rome, and because I had learned that Dr. Schenck had planned to visit the Landes region of France en route to Rome, I decided to join him.

Upon landing in Rotterdam April 13, we proceeded immediately to Arnheim, Holland, where we were the guests of the Director General of the Netherland Health Reclamation Association, perhaps the most progressive forestry association that I have ever seen. Forest planting on heath land, swamp drainage, orchard and shade tree work, all of these activities were carried out under the supervision of trained men and technical foresters with splendid success. This visit afforded the nearest approach I had of seeing some of the dune and heath planting for which Denmark is noted.

Capitals Visited Enroute to Rome

A brief visit to Amsterdam, the Hague, through the tulip fields of Holland ended all too quickly. Then a jump to Brussels where we met some of the Belgian foresters and visited the celebrated forests of Soignes, the City Forest of the Belgian capital, located about eight miles from the Battlefield of Waterloo. This was in reality a splendid city park containing what were said to be the finest beeches in Europe, and indeed they were magnificent. In order to fulfill the "desires of the owner"—the citizens of Brussels—the foresters in charge were compelled to spend every cent of their proceeds in keeping the roads, bridle paths, etc., in superb condition. In reality, it was a beautiful example of a "luxury forest." After three days in the French capital, we started for the Landes.

Remarkable Reclamation Seen

A little below Bordeaux we struck the French watering place Mimizan les Bains in the heart of this celebrated region. This district which exemplifies some of the best reclamation work ever carried on by foresters in any part of the world, was a vast region of drifting sands about five to six miles deep and fronting 150 miles on the Bay of Biscay. The first beginning in afforestation work was started in 1787 by Bremondier, a road engineer who wished to protect his bridges and roads from the drifting sands. Most of the original engineering work, drainage of swamps, etc., was finished by 1830, but since that time the work has been carried on by French foresters until, at the present time, a total of 800,000 acres have been reclaimed. The reclamation consisted in fixing the drifting sand by planting beach grass as a first step, followed later by planting of the Pinus maritima until this vast region once "blow-sand" has now become a hugely productive area supplying a large portion of the French naval stores and giving employment ultimately to thousands of people. The technique of the French forester in stopping the march of sand dunes I understand has been copied almost identically on the coast of Massachusetts and in certain parts of Michigan.

In this region the French foresters have almost disproved the adage that "you can't eat your cake and have it too." By very careful cupping, whereby only a limited part of the bark is cut off at one time, they are able to secure good profits from the naval stores industry for many years. Then when the trees remaining are mature the forest is cut clear and marketed for pit props, construction timber, etc.

Small material ready for shipment *American students inspecting thinning*

ARTIFICIALLY PLANTED FORESTS OF ARNHEIM, HOLLAND

Maritime Pine Regeneration Success

Aside from the rapidity of growth which is quite remarkable, the ease of regeneration was the most striking thing about the maritime pine. To our utter amazement we saw areas up to 1200 acres in extent **clear cut** at one time followed by complete regeneration. To secure this marvelous result only two precautions were necessary. First, it was necessary to wait for a good seed year—and strangely enough tapping seemed to increase seed production; second, before the trees were felled the **litter was carefully scraped off** so that the seed came in contact with mineral soil.

From the Landes, our party proceeded to the French Riviera in the neighborhood of Mentone. Here we were introduced to an entirely different flora and found the general appearance of the country similar to southern California. An overnight stay at Genoa; a side trip to see the engineering exhibit at Milan at the Machinery Exposition where three planers and a half-dozen other pieces of milling machinery constituted the Exhibit of Logging and Milling Machinery, which our Italian friends invited us to see, and the night of April 27 found us in Rome ready for the opening of the World's Forestry Congress.

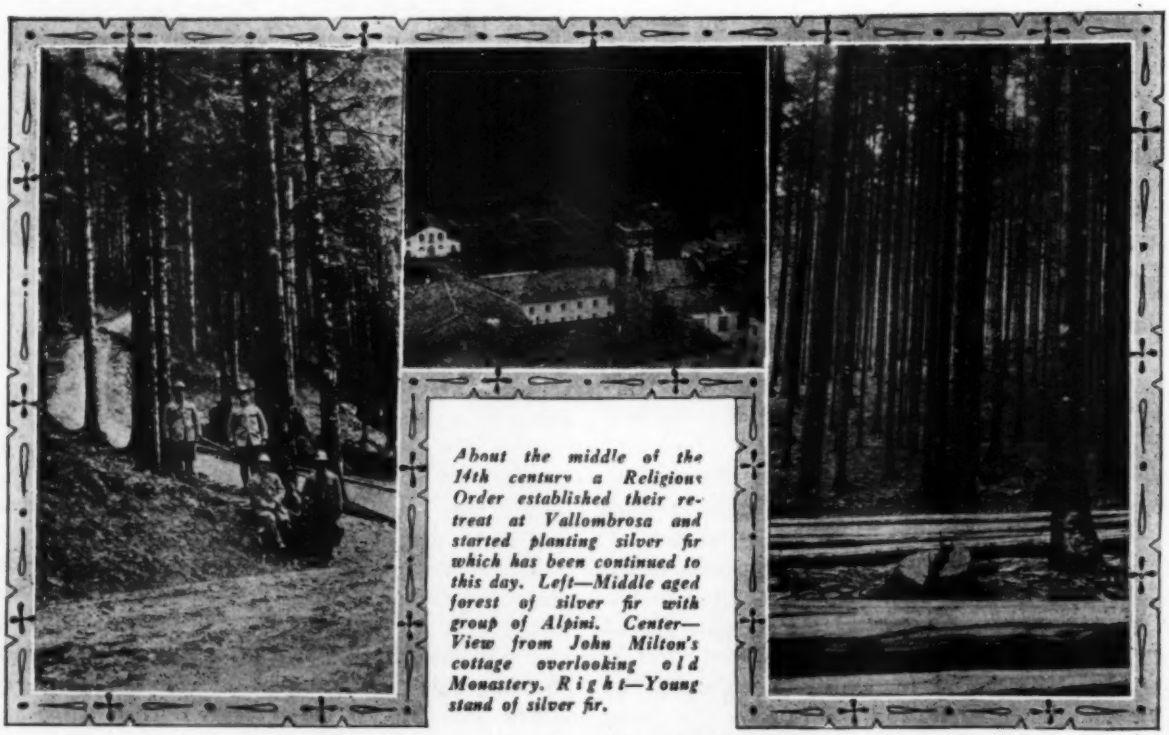
Two Hundred Papers Presented

The two hundred odd papers which were presented were nearly all general in tone, although many of them contain a germ or two of an excellent piece of research or forest management well worth trying out over here. To the American and British delegation, perhaps, the most valuable result which the World's Forestry Congress could achieve was the setting up of machinery for collecting world statistics concerning the present stand of timber, the rapidity of growth, and the rate of consumption in the various countries. However, it was only after considerable discussion that Lord Lovat's motion looking toward the creation of such an office in connection with the International Institute of Agriculture was passed.

In short, I might sum up the World's Forestry Congress as a marvelous opportunity to meet world leaders in your own profession. In all there were 800 delegates from 58 countries—a splendid series of contacts which can be followed up to advantage later on. But aside from the personal contact, comparatively little of technical value was obtained from the papers and discussions. However, it was at Rome that we met the men who were afterwards to play such an important part in arranging our northern tour, so that was a by-product of immense importance.

Invited to Visit Finland

At a small dinner given for Dr. Cajander and some of the Swiss foresters, a group of us, ten Americans and one Canadian, were invited to visit Finland under the auspices of the Finnish Forestry Department. It was on account of the early date



About the middle of the 14th century a Religious Order established their retreat at Vallombrosa and started planting silver fir which has been continued to this day. Left—Middle aged forest of silver fir with group of Alpini. Center—View from John Milton's cottage overlooking old Monastery. Right—Young stand of silver fir.

INTERIOR SCENES OF FAMOUS VALLOMBROSA FOREST
Site of the "Summer Camp" of the Italian Forest School

set for this trip that I was compelled to cut short my stay in Italy and forego the pleasure of a trip to Naples, Sicily, and the southern part of Italy.

About five extra days in Rome, and about the same time in Venice, Milan and Geneva, made it necessary for me to take a sleeper for Berlin where I met the rest of the party and together we sailed from Stettin to Helsingfors May 22.

Finland Shows Progress

On account of the strides Finland has made in the eight years which have elapsed since she became independent of Russia, a brief description of the conditions in Finland may not be amiss. Finland, the native name of which is Suomi—"the land of a thousand lakes"—is a wedge shaped country lying between 60 and 70 degrees north latitude, touching Russia on the east and Sweden and the Gulf of Bothnia on the west. Of the total area of Finland 73 per cent is forested, fifty million acres of **producing** forest. It is on account of the magnitude of the forest areas, the long distances which forest products must be transported, the relatively extensive system of management which makes the forest practice of Finland contain more of interest to American foresters than the extremely intensive forestry practice of Germany, France and Switzerland. Owing to the severe climate, short season and poor soils, the chief assets of Finland today are their forests. In addition, their water power sites totaling 1,500,000 horsepower, and lastly a marvelous national spirit should not be overlooked. The pride with which they invite strangers to see the progress which they have made since the revolution of 1918 is extremely significant and their accomplishments really marvelous. Finland is a socialistic republic, anti-foreign and anti-capitalistic, yet may I add also they would be extremely glad to have additional American capital to help them in solving some of their pressing financial problems and to develop further some of their manufacturing plants.

Private Owner Aided

Unique features of this interesting country are:

A Forest Owners' Wood Central Association—a very aggressive organization for exporting lumber.

A co-operative fire and insurance organization which has been operating for the last eleven years and now insures at a rate of $1.25 per $1,000 of value of timber land at full valuation. During the year 1925 only 2,500 acres were burned over and many years pass, we are told, without any fires whatever, due, of course, to the extremely wet springs, heavy precipitation as well as to a highly disciplined population. An idea of the importance of the co-operative movement can be gained from the statement that 95 per cent of the farmers belong to some co-operative organization.

Two other interesting facts which show the extent of socialism to which the Finnish Government is committed are, that in 1918 the government bought 80 per cent of the Gutzeit Corporation shares. This land and operating company, the largest in Finland, started in 1870, with a single sawmill. Now it owns 1,100,000 acres of well located forest land, has many mills, and represents the best in logging and milling practice. Not only does the government own shares in lumber companies, but at a town called Kemi we visited one of the most modern and up-to-date government mills, one of the best which I had the privilege of seeing in Europe.

THE CITY OF WHITE BIRCH VISTAS
Principal street in Skelleftea, Sweden

After two days in Helsingfors, where we met the members of the Forestry Faculty of the University, visited the headquarters of the research station and were entertained by many of the leading dignitaries of the capital city, we were escorted to our private car which was to be our home during our 10 days' tour. As may be imagined, during a trip of this sort, the information and side lights upon Finnish customs and civilization were enormous; forest conditions, paper and pulp plants, sawmills, experiment stations and views of the country from the car window gave us an insight into this little known country which I believe it has been the privilege of few to have.

While the real beginning of Finland as a separate country dates back only ten years, much of their

forest investigations had its start at least 20 years ago. We were amazed and delighted to find at Punkaharja, the chief experiment station situated in the center of Finland, some admirable plantations composed of many species. In addition to this central station, they have 17 experimental forests dotted over the map of Finland totaling 53,000 hectares in all.

Arctic Conditions Seen in Sweden

Leaving Finland at the frontier town of Haparanda at the north of the Gulf of Bosnia, we entered Sweden and found instructions to report at Boden. Here we were met by a very striking looking forest officer whose region comprised the northern third of Sweden. In suggesting our trip through Sweden at Rome we had expressed a desire to see some Arctic conditions. Evidently the motto of the Swedish Forestry Department must be "We aim to please." At any rate, our guide informed us that the plans were to journey by sleeper that night to a town called Kiruna, one hundred miles north of the Arctic Circle. This trip was by no means difficult as a splendid standard gauge electric railroad led to this town. This road we found was built primarily for the purpose of transporting iron ore from Kiruna to Norvak on the Arctic Sea.

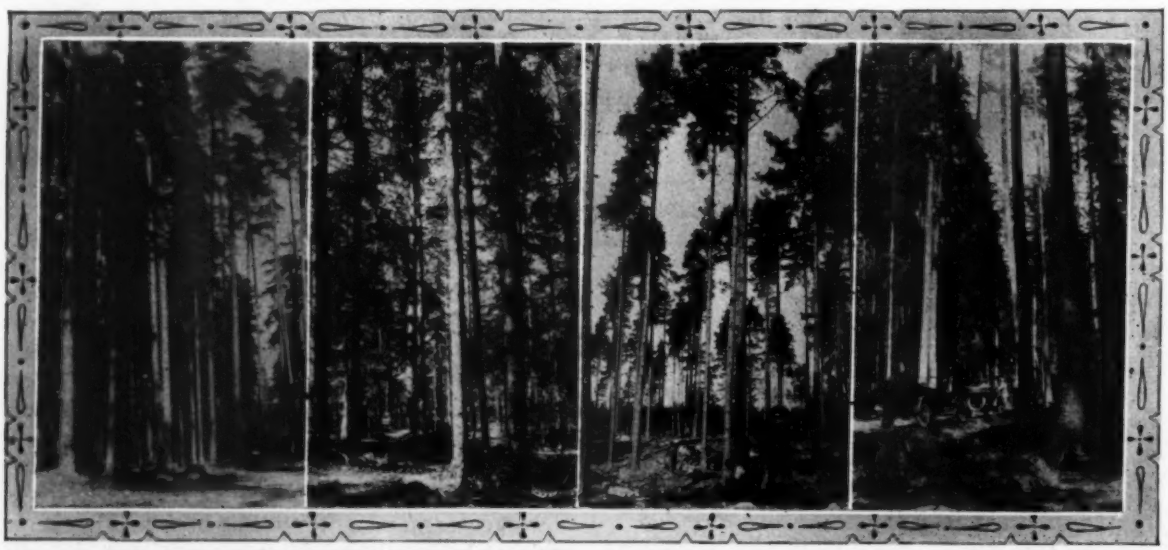
The ecological conditions which we found at Kiruna are worth a word of mention. Situated at about 68 degrees north latitude, the town itself was at an elevation of 500 meters above sea level. Around the town, stunted birches up to 10 to 15 feet in height were the principal trees—arctic mosses, etc., forming the ground cover. Low growing bush-like spruces occasionally were found, but when on our afternoon journey we descended into a little valley, we found spruces and a few stunted pines—the latter on sandier soils, coming in, bushy at first, but lower down, say at 350 meters above sea level, forming solid blocks of forest, the single trees not over 30 to 35 feet tall and up to 6 in., d.b.h, having an age of 200 to 250 years, on the average.

Invade Reindeer Country

Some idea of the climate can be obtained by the statement that on the 2nd of June we saw trappers skiing across the ice in front of the company clubhouse. We had arrived at this section of Lapland just too late to see the reindeer which had already been driven north to the summer pasturage. We did see one or two straggling herds and later had an opportunity of talking with a few of the Laplanders with their gaudy flannel costumes, queer boots—the gypsies of Northern Sweden.

After the day's excursion at Kiruna, we were given a sumptuous dinner by the officials of the iron company and at the conclusion of the banquet, for it was none other, our hosts escorted us to the train.

The next stop on our way to Stockholm was a charming little village called Skelleftea. This delightful municipality built on the bank of the river of that name, is known as the town of "White Birches" because some years ago as a protection against fire the streets in the central part of the city were planted with white birches whose thick foliage and green leaves were supposed to prevent the spread of fire. As usual we were the guests of the principal sawmill men and paper manufacturers and visited some of the up-to-date plants nearby. The following day, we were met by one of the most delightful characters it was our privilege to meet in



SWEDEN PRESENTS DIVERSE PHASES OF FORESTRY

Left to right—Superb stand of conifers on Corporation Forest, Katrinaholm. Natural forest with pine and spruce, Hallnas. Clear cutting method, School Forest, Garpenberg; the School stresses timber production rather than regeneration. Another view of conifers near Katrinaholm.

Sweden, Jagemastere Axel Elgstrand. He was not only in charge of the revier or forest district, but also Director of the Ranger School at Halnas. A magnetic individual who spoke English quite fluently; his striking personality and winning smile made a tremendous hit with all of us, and under his direction we saw as much in a day and a half as ordinarily we could see in twice that time.

Use Branches as Soil Mulch

Another interesting factor that was disclosed by our stay at Halnas was the fact that on poorer soil they lop and spread the branches as a soil mulch to improve soil fertility. In other words, in the damp climate with a well trained population they consider that the fire risk is not increased materially and the soil is gradually built up. On the moister soils where there is a tendency toward acidity, however slight, they pile and burn the brush to burn through the heavy duff. This encourages the regeneration of pine in the mixture.

Our next stop was at the forest of Garpenberg upon which is a school preparatory to the advanced course given at the technical high school at Stockholm. Here a magnificent experimental station is operated in connection with this school and one of the cardinal points of its management is that "timber **not** regeneration" is the goal of the forester.

Up to this time our southward journey in Sweden had been through narrow valleys and heavily wooded country. As we approached the southern part of the peninsula, we found more fertile land and larger towns and villages which were quite Germanic in appearance.

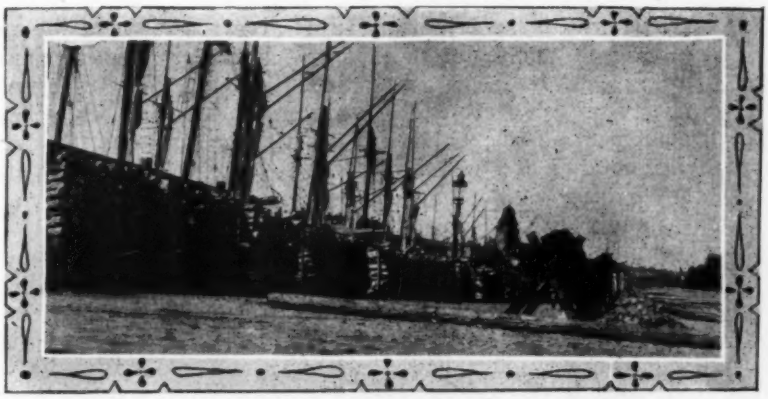
Stockholm—"Venice of the North"

Stockholm, the capital of Sweden, we found to be a beautiful city situated on a series of islands and proudly called by its inhabitants the "Venice of the North." Here again we received a most cordial greeting from the government, the Minister of Agriculture giving us a charming luncheon to which many notables were invited, and I had the honor of responding for the American Delegation.

Naturally, our first objective in Stockholm was a visit to the splendid forest school located upon the edge of the city and on the same campus, we found the Experimental Station presided over by Dr. Hendrick Hesselmann. The school was closed for the summer vacation, June 8, as much stress is laid upon practical work during the long vacation—each student being required to spend at least two summers in field work in addition to the regular course which runs from October 15 to May 30. We were welcomed most heartily by Dr. Wahlgren, dean of the school, and by Dr. Hesselmann, director of the Experiment Station. They in turn introduced us to members of their staff, all of whom spoke German and many of whom spoke English quite fluently, so that from the standpoint of actual profit in gleaning ideas concerning up-to-date methods of education and research, our stay in Stockholm was about as profitable as any.

Stock Company Forest Visited

An interesting excursion which we took from Stockholm was a visit to a stock corporation forest of 15,000 acres near a little village called Katrinaholm. Aside from the size and beauty of the individual trees, we found the system of management and their marketing methods in particular, to be well worth our study. The president of the corporation and his chief forester accompanied us on our tour and from all accounts the stock in this corporation is considered an excellent investment, for in addition to the proceeds of the timber sales, the land itself is appreciating year by year.



CORDWOOD MARKET AT STOCKHOLM
Fuelwood brought by ships and piled on docks for public sale

After about three days in Stockholm, the majority of the party left for Germany, there to disband and pursue their various ways back to the United States. However, I decided to remain over a few additional days in Stockholm for the purpose of renewing my contacts with the men at the experiment station and with the members of the teaching staff at the State Forestry School.

Scandinavia a School for Us

As a result of my first-hand observations and what I deduced from them, I am inclined to believe that on account of forest types, the presence of vast bodies of softwoods, transportation problems, systems of management—here as in Finland natural regeneration is practiced almost wholly—and economic conditions in general, that the Scandinavian

Peninsula holds more of interest and value to American foresters than any other part of Europe.

From Stockholm a trip by day to Oslo, formerly Christiana; from Oslo it was necessary to cross to Bergen, where I was to take my ship for England, by night train. Consequently, I traversed the great mountain range, the backbone of Norway, where the ridge crossed by the railroad reaches an elevation of approximately 8,000 feet, without seeing the country. I did have an opportunity of seeing some of the bleak Norwegian landscape for it was still "winter lingering in the lap of spring" and I did see some of the magnificent scenery in the fields as we rolled down toward Bergen in the early morning light.

Making the Motor Truck Fit the Job

By ERNEST A. SAUNDERS

ANYONE who is in a position to ovserve the practices of many different paper manufacturing concerns soon learns that each has its own way of going about the purchase of new truck equipment. Some go into the subject very deeply and obtain a careful analysis from an outside advisory engineer whose judgment is impartial to all makes and whose recommendations are based on the owner's special needs. Others are not so careful. They decide they need a new truck of a certain capacity and choose that which seems to them to offer the best value for their purpose.

Truck buying nowadays, however, is much different from what it was ten, or even five years ago. Competition has forced truck manufacturers to adopt more aggressive methods to sell their equipment. Paper mills are buying **transportation**, not trucks. By this we mean that they are buying equipment as a service, not as a product—on a basis of what it will do for them, not what it is.

This point deserves emphasis and can be made clear when we say that it is a common thing today for a local truck sales agency to make a complete analysis of a prospective purchaser's hauling requirements to show **why** and **how** the types and capacities of trucks which they recommend, should be used. Among the larger and best reputed manufacturers who offer this analysis service, engineers are employed who do nothing but this. Although, of course, their purpose is to sell the equipment, the writer's experience has been that most of them study each problem fair-mindedly. The service is quite worth while and if the buyer knows enough about his own hauling conditions to intelligently agree or disagree with the report, he does well to take advantage of it.

This tendency to buy trucks on a basis of the way they fit into a business as transportation units has been responsible for the growing acceptance of the "transportation engineer" in the truck field. In many large cities today, there are trained engineers whose services are available as consultants on problems of both buying and using motor trucks. These men work independently of the truck manufacturers on a fee basis. The field is a new one, yet they are, as a fraternity, working hard for the acceptance of the industry. The writer knows of many instances where the services of an outside viewpoint such as this has paid its cost many times in actual savings of transportation costs. The transportation engineer is being consulted quite frequently now on such matters as selecting equipment, designing bodies, re-arranging schedules, laying out garages and repair shops and establishing maintenance policies.

When an executive of a paper mill has studied his truck buying problem to the point where he knows the type and capacity of equipment he should buy, so that it becomes a matter of choosing between makes, he will find a great source of help in the specification tables. These tables show the principal features of the various makes and sizes of vehicles.

A good way to use specifications as a guide is to make up a set of cards, one for each truck in which the buyer is interested. If each of these cards has written on it the essential features of one truck taken from the specification table, the buyer can lay the cards before him and by process of elimination, select the one which he considers to be the best purchase. In this way he has the equivalent of the trucks themselves before him. It enables him to keep the advantages and disadvantages of each fresh in his mind all the time and minimizes the danger of being swayed by persuasive salesmanship.

Among the points to be considered, including those shown by the specification tables, the writer considers the following to be the most worthy of study in matching one vehicle against another. In this list, suggestions are added which can be answered by the buyer's own estimate based on the general reputation of the vehicle and information from other sources.

Actual capacity.

Chassis price.

Estimated mileage life (based on reputation for quality).

Facilities offered for service by local sales agency.

Wheelbase (both short and long have advantages depending on purpose: short for easier hauling; long for better appearance and distribution of loading space).

Manufactured or assembled? (Experienced buyers usually give preference to a truck wholly manufactured by one reliable manufacturer.)

Bore and stroke (indicates size and capacity of motor).

Rated H.P. (Rating given by National Automobile Chamber of Commerce is fair guide to actual power of vehicle.)

Gear ratios (car geared high better for speed on level highway; geared low, better for hilly country). Weight of chassis.

First Points to Consider

The important point which the writer wishes to emphasize in this article, however, is that the thought surrounding the purchase of a truck begins long before the specification tables are consulted. Too few operators consider these very important preliminary steps:

1—**Determination of Best Type of Units.** The problem here is to decide which of the following types offers greatest efficiency:

(a)—Tractor trailer.

(b)—Tractor semi-trailer.

(c)—Demountable bodies.

(d)—Conventional truck chassis.

2—**Choice of:**

(a)—Gasoline truck.

(b)—Electric truck.

3—**Selection of Body Design.** The problem of choosing the body type is particularly important. The motor truck which will be best adapted to work in conjunction with the paper mill's loading conditions from the shipping platform and which has the type of body that best meets the load requirements will produce a cash saving well worth the time required for a careful preliminary study.

There is a body type to meet every paper mill's local conditions perfectly. Even under the most specialized cases, there is no need for a compromise because the ideal body may be built to order according to specifications at only a slight additional expense.

4—**Judging Capacity Required.** It is a common mistake to select a vehicle of inadequate size, resulting in the very expensive practice of overloading. A small percentage of overload with a high quality vehicle is often justifiable. But too many concerns insist on learning through bitter experience that with motor trucks, as with other things, "something for nothing" is not obtainable. Investigation shows that a large percentage of high hauling costs can be traced to heavy repair bills and breakdowns, and these in turn to the practice of overloading.

As the size of the business increases and as it branches into fields which require a wide radius of deliveries, it is reasonably possible that the owner will find the use of a large-size vehicle, say the 5-ton model, most profitable. There is a tremendous economy in big hauling units but it goes without saying that they must be routed intelligently so that the carrying capacity will not be excessively wasted.

It is a mistake to purchase a miscellaneous assortment of different makes and models of vehicles without regard for the most desirable feature of unifomity. There are many advantages to be gained in standardizing as far as possible on one make and type of vehicle. Drivers and mechanics become accustomed to the vehicles in this way and learn to discover repair requirements and adjustments in their early periods. Service and parts are more easily obtained—in fact parts may be kept on hand for immediate use. Many concerns who have standardized their truck equipment, keep complete units, such as motors and transmissions on hand so that they may be substituted in a truck for a unit that is taken out to be repaired or overhauled.

Two Kinds of Buyers

The paper mill executive who is about to buy truck equipment can place himself in one of two classes. The truck industry recognizes these two kinds of buyers, and it will be noticed that it appeals to them correspondingly in its advertising and selling efforts.

The first class is the buyer who is technically inclined. He will study the specification tables thoroughly. He knows the advantages of certain units of design both as applied to the quality of the truck and its value to his business.

The second class is the buyer who does not understand the engineering features of a truck chassis. He is too much consumed with other business worries to take the time to make a study of motor mechanics.

If you are of the first class you will find the specification tables to be most valuable. You will be able to weigh advantages and disadvantages of one against another. Very likely, if you are highly seasoned on the subject, you will find it necessary to make some compromise in reaching a decision, but you will find the machine in which the features that you consider most important predominate.

If you are of the second class, the best advice the writer can give is to steer clear of specifications, except, perhaps, to the extent mentioned earlier in this article. Do not invite too many explanations from salesmen, for each will surely be able to justify in argument, the advantages of his design. The result will be confusing and may lead to the least desirable choice. Rather depend on the reliability of the manufacturer, his past record and the present popularity of the vehicle.

To all truck purchasers, however, the writer feels that the following suggestions are appropriate, no matter how any one individual may look at the truck buying problem.

1—Value your own experience and observation. If you have had good results from one make of truck, stick to it. Keep your eyes and ears open and get the sentiments of others whose experience is equally as valuable to you as yours.

2—Make sure you will get service. A truck is

only as good as the repair and parts service you can get on it. Can the man who sells you the truck stand back of it? Will he be able to render service in years to come?

3—Be careful not to buy a possible "orphan." If a truck manufacturer goes out of business, the truck drops considerably in re-sale value. Parts and service are difficult to get. A firmly established truck manufacturer will continue to render service and supply parts when they are needed.

4—Do not be confused by high trade-in offers. Remember that various trucks have various margins allowed to dealers on which to trade. The car that has a wide margin is invariably over-priced to permit it. The dealer who "trades wild" is a poor business man and very likely will not stay in business to give you service for the life of your truck. You get "so much for so much" with trucks as with everything else.

5—Be careful about buying a truck that makes radical changes in chassis or motor every few years. Don't find yourself later with an obsolete model on your hands.

6—Think of re-sale value. Certain trucks command a higher second-hand value than others. You know which they are. Favor the truck on which you will suffer the least depreciation if you should be compelled to sell it in a month, a year, or even five years from now. Ask yourself, "Who would want my truck if I should ever want to sell it?"

And in conclusion, let us say again that with the use of motor trucks, the proper or improper selection of the vehicles will positively make or break success from the start. Every item of operating cost and every factor involved in rendering dependable service is determined by the manner in which the trucks are suited to the work they must do.

How to Get Ahead

By JAMES BERTWELL WHITE
Superintendent, National Vulcanized Fibre Co., Yorklyn, Delaware

EVERY normal man wants to get ahead. Every normal man wants to try to advance himself as much as possible. The big question is—How can a man get ahead? We superintendents, who are now getting along in years, look back over our lives and can see in retrospect many things that would be helpful to the younger men now coming along the pathway which we have trod.

There are many constructive thoughts that we older men can pass on to the younger men that would be very helpful to them, if they would just have the good judgment to follow competent counsel. Take the matter of advancement. Just what is advancement? Most young men do not realize that advancement is in the man—not in the job. If a man has advancement in him, then he will find it in his business. Advancement is not a job quality, it is a personal quality.

In my long experience as superintendent I have met a lot of fellows going around looking for a job with advancement. They try one place, don't like it or find it too hard and decide to quit it and search for a place where advancement will come a little easier.

The trouble with these fellows is they don't know there is not such a thing as a job with advancement, unless the person occupying the job has advancement in him. Most young men do not realize that no one can give them advancement. It has to be **earned.** True advancement can't be handed to a man on a golden platter. The man has to earn it, he has to qualify for it. Advancement means a mental change that takes place in the man. Being placed in a higher position is merely the outward manifestation of inward growth. Summing it up—advancement means increased knowledge about the job; increased ability; increased usefulness; increased worth.

I've heard a number of men complain—"I have been here a couple of years and they haven't raised me yet". These men do not realize that asking does not get raises. These young men do not realize that the length of time they have been with a concern has little to do with getting a raise. Employers don't measure months or years. They measure knowledge, good judgment, willingness to work, the co-operative spirit, initiative and accomplishment.

Of course, some jobs offer better opportunities for advancement than others, but the right kind of man will find some advancement—something to learn—in any job, while on the other hand, the man who hasn't advancement qualities in him will not advance himself in the finest job in the world. Most men do not realize that when they get advancement inside of them, they will get it outside; that when they know more they can get more; that when they have greater knowledge and greater ability they will get a bigger job.

Look Yourself Over

The thing for each man to do is to look himself over very carefully, compare himself with others, then try to improve himself. It is easy to see the faults of others, but it is hard to acknowledge our own. Many a man starting out in the business world persistently blinds himself to his own failings until it is too late to make a new start. Years of aimless-

ness, of carelessness and of wrong thinking finally get him into a rut from which he simply cannot extricate himself.

There is just one way to avoid the rut of failure and disappointment, and that is to get acquainted with yourself. Look yourself over, analyze yourself.

The question often comes to a man's mind how can I be certain of success? How can I make success sure? Well, we can all make success certain by doing certain definite things. If we do them,—and we need not have extraordinary ability either—we cannot fail. The first definite step is to get a real picture of ourselves, of our faults. Can we overcome them? Our bad habits,—can we get rid of them? Our thinking—is it clear and clean or confused and tainted? Our strong qualities—are we using them to the best advantage?

We might often ask ourselves—what does the Boss think of me? What do my fellow workers think of me? Do they admire my spirit of helpfulness, my energy, my desire to learn and to get ahead?

If the young men in business will compare themselves with other men in the same ousiness, they will learn a lot. If they will ask themselves a few sensible questions like these,—do any of the other men make a better showing than I do? Are they more alert, more ambitious, more efficient, do they know more about the business than I do? Am I a leader or a follower? Am I alive to my opportunities, or am I discontented wishing I were in another job or in another business?

My advice to younger men coming along the success route is to look themselves over, get off in a quiet corner and think it over. Then write down in 1, 2, 3 order the definite things they are going to do to improve themselves, to make a better showing in their work, to make sure that they are doing everything possible to make their success certain. remembering that there is no great virtue in just **knowing** their faults, but that the real value comes in **overcoming** them—that's what counts. It is all right for us to recognize our weaknesses, but we shouldn't meditate upon them all the time.

What Is Your Worth?

Another thing a young man should think about is —what am I worth to this business? Our minds are capable of functioning in a number of ways. We can observe, we can remember, we can imagine. But the greatest and most valuable function of our minds is production and, like a factory, our minds can produce and our most valuable products are **Ideas.** The time is here now when a man's business worth is measured by his ability to think, by the quantity and quality of the ideas he produces.

A factory, to produce anything, must supply itself with raw materials. The mind, to produce ideas of value,—of quality—must be supplied with the raw materials called knowledge, information, understanding, study—education. For a young man to be able to produce valuable ideas later, he must acquire these raw materials now. He must get a thorough knowledge of his job, of his business, keep informed of what is going on in the business world, and make himself understand the facts and principles of business. He must understand that to get anywhere in the business world, hard work is necessary and hard thought is indispensable. He must work hard, study hard and think hard because the whole business world of which we are a part, is a product of thinkers. The thing for a young man to do is to realize that the time to start in to develop his thinking ability is right now. He should begin right away to use the knowledge that he has already acquired and use that knowledge, try to produce new and valuable ideas.

He must not be content to follow directions entirely, for sooner or later the measure of his worth will be the measure of his thinking. We should all start producing valuable ideas now and some day our output of ideas based upon our knowledge and experience will make us invaluable to our employers and a distinct asset to the business world.

But trying to succeed without much reading and studying is like trying to build a house without hammer, saw and materials. Another thing we must remember is that it doesn't help to know a great deal more than others, if we dont put our knowledge to work. Few things are perfect. Men everywhere are constantly thinking of ways to bring about improvements. The ways of doing things in business are constantly being changed and improved.

As I look back over my life, I think that if I were a young man, I would try to find a hard job, because hard jobs create mental muscle. Soft jobs create mental flabbiness, inertia and laziness. No athlete ever grew muscle by watching others exercise. And so no successful man ever won distinction by holding down soft jobs. A young man should remember that an easy job now means a poor job later on. If young men will study the lives of the big men of America like Thomas A. Edison, George Eastman, Elbert Gary, Charles Schwab, they will find that almost without exception these successful men had a hard row to hoe when they were young. To them, life was a struggle from the very beginning, and it was because they had to work hard and had to use their brains in solving hard problems, that they grew to be men of outstanding accomplishment.

So to the young man of today, I would say that if you seem to be having a hard time, if you have a job that calls upon every ounce of your energy and ability to get by, if every day you are confronted with difficult problems requiring your best thought power—be glad of it. You have no cause to be downhearted. Yours is a position to be envied. If you are meeting the situation like a man, you are

growing, you are building for the future. Opportunity is nothing more nor less than the chance to work hard. And the harder the work, the greater the opportunity. For, every difficulty that you overcome, every hard problem that you solve, every fight that you win, means greater ability, added power, greater capacity.

A young man should remember that great achievements must be preceded by great preparation. I often wonder if the young men of today worry as much about if they are paying their employers well as they do about getting their employers to pay them well.

Knowledge—the Basis of Progress

Young men would do well to realize that knowledge is the basis of all progress. There are two ways to learn—from experience and from study. Some people imagine that "book learning" is entirely unnecessary. They say the best school is the school of hard knocks. Well, the man who depends entirely upon this school may never get his learning, but he'll certainly get his hard knocks. A lot of young men "kid" themselves a great deal about this matter of education.

The best investment a young man can make is the investment in his own education. Remember, as you learn, you earn. You get more knowledge out of a job by putting more knowledge into the job. A good question for all of us to ask ourselves is this—are we putting new thought, new knowledge, new ideas into our daily work?

A young man should realize that there is nothing can hold him back but himself. Bad health could hold him back, but most young men have good health and if they want to, they can keep it. No education could hold a young man back. But, today there's a free school or a correspondence school within the reach of every man. No opportunity could hold a young man back; but fortunately opportunity is something that can be made. Anyone, no matter how situated can create it. Bad luck could hold a a young man back; but no one who has anything in him will let luck or chance control his life.

So summing it all up, today if the young man in business fails to move forward, there's just one reason—he's holding himself back. If he doesn't get an education, he alone is to blame. If he doesn't learn his business, he has no one but himself to blame. There is no power on earth can hold a young man back if he wants to move forward. No one can keep him from using his energy. No one can keep him from using his brain; no one can stop him from thinking; no one can keep him from learning; no one can shut his eyes; no one can stop up his ears; no one can make him quit observing. Is there any force outside of his own will strong enough to crush his ambition? Strong enough to make him want to give up before the battle of life is half started? No there is none. He controls his own life. He can do with his life what he **wills**. If he wills to grow, if he wills to push right on, to move ahead, to be in the front rank with those who are working and smiling and living, he can be there,—no one can stop him. There's nothing can hold him back but himself.

It Is Hard to Fail—

We hear a lot about the hard road to success and the easy way to failure. I think it is about time for some of us older men to show the younger men how hard it is to fail. It is hard to fail when one knows the real meaning of work, when we understand that it is God's greatest gift to us and not a trick of the devils; when we realize that the greatest joy that we can experience is the joy of real accomplishment.

It is hard to fail when we have supreme faith in ourselves; when we feel down deep in our heart that we have as good ability as many others who have made their marks. It is hard to fail when we can come up smiling every time we are knocked down; if we are the kind that don't know when we are licked, if we can understand that knocks are boosts because they grow real moral and mental muscle.

It is hard to fail if we are optimists; if we believe in our fellow men, if we believe that the world is growing better, and if we are doing our part to make it better. It is hard to fail if we have knowledge, if we have mastered some one thing well instead of piddling away our years getting a smattering of many things.

It is hard for a man to fail when he has mastered himself; when he can quickly obey his good impulses and put away his bad ones; when he has a mind and a will of his own and cannot be swerved from his good purposes. It is hard to fail if we can make friends wherever we go, when we can get people to like us, and believe in us. It is hard to fail if we are not selfish; when "others" is one of the words in our vocabulary; when SERVICE is written in large letters before our eyes; when helpfulness is in our make-up.

Summing it all up, it is hard for a young man or in fact any of us to fail when we like work, have faith, learn the value of stick-to-it-iveness and determination, remain optimists, acquire knowledge, and render real worth while service to others.

Now, it may not be exactly easy for all of us to do or acquire these things, but most of us can do it if we want to. We can if we believe we can. Let us try. Let us use what we've got where we are, to get what we want. That little word **up** is a good one to remember. Wake up; get up; brace up; cheer up; pay up; and work up. SUCCESS, it's up to you.

When both the executive and the rank and file alike see that industrial relations are just plain business relations they are in a position to profit most by the work carried on under that name.

Developing Mass Psychology in the Paper Mill

By HERBERT D. ALLEN
Vice President, Elliott Service Co., New York

This is the fifth of a series of articles which began in the February issue of THE PAPER INDUSTRY.

IN A RECENT issue of "Collier's" there was a rather remarkable statement. Roger W. Babson, who has made a fortune and built a whole community through the sale of statistics, said:

> "The chief thing I have learned during thirty years of working with people and statistics is that the world is not ruled by figures but by feelings. The biggest job during the years ahead will be to harness for useful service the forces of human nature, just as during the present century we have been learning to harness the forces of inanimate nature."

Now we readily admit that "mass psychology" does not sound like an interesting thing to develop in a paper mill—or anywhere else. But "morale", "esprit de corps", "team work", etc., do not tell the story. Suppose we say instead, "Getting nearly every employee of a paper mill to be interested in the same things, thinking the same thoughts, and feeling the same way—at the same time"?

To which the normal reply would be, "It can't be done!" And yet it is being done every day. Even harder jobs of mass psychology are being done. A little while ago Henry Ford got more people to ask a question than had ever asked any one question before, probably in the history of the world. "Have you seen the new Ford?" And getting the man in the street all excited about a car is a harder job than keeping him interested in his job.

Let's admit that the human feeling, the motive, used in accomplishing this result was the simple one of curiosity—really a national characteristic, this desire "to be in the know." Just as simple and effective feelings and desires can be utilized to develop mass psychology in the paper mill. What can be accomplished by it?

Unity of thought and feeling, rightly focused, will help management to produce:

Lowered costs
Reduction of waste, including accidents
Maintained, or increased quality
Lowered labor turnover
"Morale"

How is this produced? Fundamentally, of course, through leadership instead of drivership. But to lead successfully, the leader must be seen and felt. Napoleon knew how to use general orders, and to let his men see him and hear him. Real leadership today is almost impossible without effective direct contact with the worker.

This sounds like publicity—and it is. It is tremendously effective—and wrongly done, very dangerous. Many advertisers have learned that a mediocre product could not stand the pitiless, white light of publicity. Many good products have succumbed to advertising wrongly handled.

Many paper manufacturers have learned to their sorrow that just plastering a mill with posters of the "uplift" variety may result in the lowering of morale—not in raising it. For the worker will inevitably believe "That poster represents management—that's the limit of management's intelligence. They think I will swallow that stuff. Phooey!"

But a real job can be done if it is handled sincerely, honestly, intelligently and if it starts from what is on the worker's mind. The result desired is this, to repeat it again:

> "If men are **really** interested in the concern they are working for, if they really understand what it is all about and are thinking straight, and realize that the interests of management and men are identical, they will do that little bit more or better or safer that makes the difference between working for pay day and working because they like it."

The first part of this internal advertising job is educational—"if they really understand what it is all about, and realize that the interests of management and men are identical." This part of the job—getting across to the worker the simple fundamental economics of working—is handled under The Elliott Plan in two ways.

The **general** ideas—the necessity for the company making a profit, the necessity for maximum individual production, etc., is "sold" largely through Minute Messages from men who have succeeded, leaders from the ranks who can and do speak with authority. These are backed up by Production Posters—photographs of workers on the job, accompanied by the right kind of production "copy."

The **specific** ideas—company news, policies, records, results, etc., are given internal publicity on specially designed display material, over the manager's signature. It is hard to exaggerate the interest in and effectiveness of such material. We are all curious, we all want "to be in the know," and

we all will gossip about the outfit we are working for. This phase of internal publicity puts to work some very human instincts, common to all of us.

Instead of working blindly, stupidly, fearful at times because he doesn't understand the rules of the game and how the machinery and organization of production really work to produce a profit, this education helps the worker to understand what it is all about. It helps him to realize the importance of his job and his place in production.

Fear and Desire

In management and personnel association circles, we increasingly run into this subject, "Motivation of the Worker." Probably because of technical training, management is usually very willing to adapt improved compensation methods and insurance plans, but hesitates to adopt employee representation or direct employee contact methods. The average technical man shies off of "Motives" and "Motivation."

Do we actually do constructive work for the paycheck or for non-financial incentives?

Salesmen selling on commission are being paid by simple piece rate. If they want to make more money, the answer is—to work harder or more intelligently and sell more goods—every financial incentive is there. And yet sales managers know that sales contests, for cups and prizes as well as for monetary awards, are just as effective with commission paid salesmen as with salaried salesmen.

The desire for individual recognition, for the acknowledgment and display of success, of leadership, of accomplishment is stronger than the financial incentive alone, even with a group of intelligent salesmen.

We stated, a few paragraphs back, that unity of thought and feeling in a mill would help management to produce a list of undesirable results. Not the least desirable result of such a condition—a lot more fun and satisfaction in the daily job for everyone, superintendents, foremen and workers. Let's not forget that just plain human happiness and contentment is a determining factor in low-cost, quality production.

Fear and desire are the two human emotions or feelings which the industrial manager has or can use "to harness for useful service the forces of human nature." For these are forces. All the motive power of industry has been harnessed by these two emotions working in men. They seem intangible when compared to a blue-print of a power transmission layout. But they cause things to happen—they are the fundamental prime movers of all industry.

Men started to work because they would rather eat than be hungry, rather be warm than cold, rather be sheltered than exposed to the weather. So we used fear as an industrial motive, and it helped to build this country through a pioneer period. Driving a railroad through a wilderness, logging out the virgin timber in Southern Michigan—fear was a workable incentive.

But pull those men in from the bush and start them to work in a paper mill, and fear becomes a dangerous motive. Would you rather have the men running No. 5 super-calender motivated by fear of a lost job, or by pride of craft, desire to get ahead, the ambition to set up a new production record for the machine?

American workmen have a tremendous capacity for self-improvement, for growing, for getting ahead, for responding to the team-work idea, the organization spirit. Advertising of better ways to live has helped them come up to a standard of living which we would have thought unbelievable only twenty-five years ago. Today we would not dare call luxuries the papermaker's car, his radio, bathroom, kitchen cabinet—a list too long for this article.

The worker demands these satisfactions and his desires have increased and are increasing. It is management's job to tie the satisfaction of these desires to the job. These desires can be met and his scale of living can be maintained only through not merely maintained production, but increased productivity per individual. No mill owner can control the future of his workers except as he can help them control their own productivity.

The product pays the wages—the paymaster only handles the money. So let's associate this idea with a large photograph of another worker, on the job, in actual production. Let's do this with similar ideas week after week, tying in these simple production ideas, thoughts, feelings, economics, with the daily job.

Let's take a leaf from successful advertising and get across one idea at a time. Let's put these photographs on the bulletin board—and then take another leaf from successful advertising and give them enough circulation to make them operate. Such a photograph is not "uplift," it is not preaching, it is interesting and welcomed by the worker. So let's post these photographs throughout the mill—the same idea at the same time throughout the mill. Let's start conversation among the workers. Start constructive gossip and argument about how to maintain the satisfactory present condition.

Is this theoretical? Not at all. It is identically the same method that has been used in safety work, with definite, tangible, operating-statement results. In safety work, we found that fear was not so effective a motive as constructive suggestion.

And "selling" the worker on low-cost quality production is an easier job, fundamentally, than "selling" him on safety. Ask yourself this question—would you rather have a job, or a safe job? There is never a scarcity of men for dangerous jobs, if they are well paid.

We have said that the only way we could describe the condition we would all like to produce in our organizations was "the development of mass psychology." Fifty-three years ago an American economist propounded the theory that there was no "natural" limit to wages, that actually they were limited only by the productivity of labor.

Half a century has gone by and American management and labor are just starting to think about it—when they start to **feel** it, our industry is going to take another big jump ahead. The delay has been caused by a feeling that there was a "natural" antagonism between capital and labor. Today we know better.

As paper makers we know our market is American labor, either direct or as buyers of the product of those to whom we sell. His welfare, his continuing buying power, is our concern. We did not ask for this responsibility, but if, as it seems, it is a condition of continued prosperity, we will assume it and work it out.

But we cannot work it out alone—the worker must hold up his end. He must understand the situation. And here is where mass psychology enters. Tell the worker about it and you have only thought. Thought is not dynamic—it does not cause action. Thought must become emotionalized into feeling. The worker must **feel** his own selfish interest in maintaining low-cost quality production.

But we must remember that the simple stating of a thought, however sound and however true—will not cause action. We must use suggestion, association, repetition—all that we have learned in consumer advertising and selling. We must always appeal to the selfish interest of the worker.

I say to my six year old boy, "Don't scuff your feet like that," and willing though he may be, it makes no impression, it doesn't bite in to his feelings, he has no "association peg" on which to hang anything. Nothing happens, because nothing has happened to Drew.

If I say instead, "You know, Drew, I never saw John or any other big boy or man scuff his feet like that," something does happen. An action, or the desire leading towards or away from it, is associated through the power of suggestion with an ideal or a stronger desire. Drew refuses to consider himself a small boy, and stops scuffing his feet. I have appealed to his own selfish interest, and got a result.

It seems like a far cry from a six-year old to the mature employees of a paper mill, but the principles are exactly the same.

It took management half a century to begin to believe in a sound economic theory, once stated, because it was to no one's selfish interest to "sell" management the idea. We now know how to develop mass psychology in groups and it is to the selfish interest of both management and the worker to develop the new attitude towards production.

Wages and profits both come from the same dollar, and in direct proportion to the contribution made towards giving the buying public a low-cost, quality product. It is hard to believe that management will not quickly and effectively use the tools with which they built a market, to help them produce goods to supply that market—at a profit.

The Yankee Machine

By R. J. KENNEDY
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This article in two parts was presented to the class in the Pulp and Paper Course in the Vocational School at Rhinelander, Wisconsin. Part two will be published in the July issue.

THE Yankee Machine is one that makes machine glazed tissue paper. The main difference between the Yankee Machine and the fourdrinier is that the Yankee Machine uses a pick up felt to take the paper off from the wire and over the machine, and it uses only one large dryer with a polished surface to give a smooth glazed finish to one side of the sheet and dry the paper. Other than these differences, the fundamental processes of making the sheet of paper is very much the same on the Yankee as on the fourdrinier machine. For this time, we shall just take up the first half or the stuff box, jordan, screens, white water box, head box, slice or stock-inlet and wire; or in other words, the fourdrinier end of the tissue machine.

Under ordinary conditions, the stock is pumped from the machine tank in the basement to the stuff box in the machine room up over the jordan. The stuff box is usually divided into two compartments; one inlet and two outlets are provided. See Figure 1.

The stock is pumped in from the bottom of the first compartment which has an overflow back to the machine tank and a gate opening into the compartment leading to the jordan. There should always be enough or more stock coming into the stuff box than what is needed on the paper machine. If anything should go wrong with the pump and the amount of stock should be cut down so that the machine was taking about all of it, and should the head of stock in the first or inlet compartment become several inches lower, the weight of the paper on the dryer or reel would also become lower. If the paper

was running at, say 11 lb. basis weight, and the head of stock should drop two or three inches in the stuff box, the paper would be around 9 lb. or 10 lb. basis weight. Usually, such a condition would immediately start the paper breaking at the reel, or haying-out as we call it. Of course, if anything such as this happens, the machine tender gets busy in a hurry and finds out just what the trouble is. Nevertheless, it takes about ten minutes for him to get the paper back up to weight and sometimes more than ten minutes.

The stock passes through a V shaped opening or gate that has an adjustable slide on it, and runs to

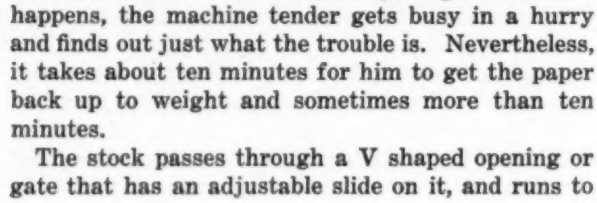


Figure 1

the jordan. The surplus stock that is not needed on the machine is run over the overflow into the second compartment which has a pipe opening running back to the machine tank. In this way, by having a pump that will always deliver a little more stock than is needed at any time on the machine, a constant head of stock is maintained in the stuff box and a constant flow or an exact amount of stock is delivered to the jordan. It is plain that more stock will pass through a given opening in the first compartment if it is full of stock or has a high head than if it is only half full or has a low head. Being full of stock, the pressure at the opening would be greater due to the higher head of stock in the box. Being only half full, the pressure would be less and much less stock would pass through the opening, causing a decided drop in the basis weight of the paper on the machine.

Purpose of the Jordan

The jordan also will give trouble if the stock is not delivered from the stuff box in a constant flow. The purpose of the jordan, or refining engine, as it is sometimes called, is to continue the process which started in the beaters. The pulp as it goes into the beaters is either in the form of laps, or sheets of pulp, or deckered pulp in the form of slush. It will be noticed that when stock is in water, it most always stays in bunches or lumps; it looks flaky. In the deckered stock this will be noticed and also in the beaten stock. Of course, the longer it is beaten, the more the lumps smooth out. Now, by the time this stock gets to the jordan, it is brushed out and hydrated to quite an extent. However, it is not the intention to have this stock exactly hydrated or refined enough so as not to use the jordan. It is left for the machine tender to use the jordan to refine the stock exactly as it should be in order to run well on the paper machine and most of all to make good quality paper. Other things being equal, the machine tender can make or break the quality of the paper with the jordan and also the quantity production expected from a day's run.

On most grades of paper, strength is of the greatest importance and is one of the first marks of quality. Even though the order may not call for a strength test on the paper, if the strength is not very good, the paper is hard to handle; you may have quite a number of extra breaks on the machine, and troubles of one sort or another, all of which work together for the worse and further cut down the quality and quantity of the production. There are times when the strength is down on light-weight tissue papers that the machine men must be very nimble-fingered to handle it.

The action of the jordan on the stock is two-fold; it is both hydrating and refining. Being shaped like a cone and lined with bronze bars protruding almost one-fourth of an inch and having a conical shaped plug covered with bronze bars which also stick out out about one-fourth of an inch, one may readily understand how the jordan does its work. The stock enters the jordan at the small end and is forced around the inside of the cone-shaped refiner between the close, accurate clearances of the shell and the plug. If the plug is set up hard against the shell, the stock is hydrated and also cut up a good deal, and if cut up very much it naturally becomes weak. It is possible to cut it up so much that the paper cannot be run on the machine without all breaks, or haying-out as it is called. On the other hand, if the jordan is set up lightly, the fibers are brushed out more, hydrated more, (that is, more water beaten into them), the coarse fibers are refined more and the lumps or bundles of fibers are so thoroughly separated that when they get to the wire, good paper can be formed. There is an indicator on the jordan that shows exactly how hard it is working.

One jordan is good on a paper machine, but two jordans are better. Stock may be mixed up well, screened and agitated in every way possible, but if it has not been slowed up or hydrated some (water beaten into it) and refined some, it will not make real good paper. There are many good reasons for this which will be explained later. Thus, using two jordans instead of one, the machine tender may set them both working lightly on the fibers and get the necessary hydration and refining without destroying or breaking down the strength of the fibers.

Now, it is only reasonable and it is true, that the wood fibers of this stock we make paper out of, have length, size and strength; and they will endure a certain amount of brushing out, beating, hydration, refining or abuse, (whichever you may want to call it) before they will break down. But there most certainly is a point in the beating and refining operations where the fibers will break down. All stock

is not alike; on some grades it may break down sooner than on other grades. When a machine tender has learned how to hydrate and refine stock, he has left many of his troubles behind him. It usually takes a considerable length of time to learn this.

Jordans are just like other pieces of machinery; sometimes they do not work right. When talking of the stuff box, I said that if the head of stock in the box went up or down, the weight of the paper also would go up or down on the machine. But that is not all that will happen. When the head goes down, the stock passes through the jordan slower and is cut up more, and when the jordans are set up very much, this is very noticeable in the stock on the wire of the machine. The sheet will carry water farther down on the wire for a time, which would indicate that the stock was getting heavier or slower instead of lighter in weight as it actually does. Another cause of trouble with a jordan is what we call "backing up", which happens when the bars in the plug and shell get worn down rather near to the wood filling. The clearances between the wood fillings become less and less as the bars wear down, and the capacity of the jordan becomes less and the stock backs up, causing a higher head in the pipe or stuff box over the jordan and then we have trouble with the weight of the paper again, the same as we had when the head of stock in the box was changing from other causes, as mentioned in the paragraph on the stuff box.

After leaving the jordan, the stock goes either directly to the mixing box on the back side of the wire or into the white water pipe line near the fan pump somewhere between the mixing box and the screen. The mixing box is simply a square box with an overflow and catches the white-water which drains through the wire and also the water drained through the wire by the vacuum or suction boxes.

Mixing and Screening

From the white-water box or fan pump, the stock and water are mixed and pumped to the screens. The latest type are inward-flow automatic screens and are very much better than the old type screens that were in use some years ago. The Bird screens used at the paper mill will handle as high as twenty-four tons of stock in twenty-four hours, and are self-cleaning so far as the plates are concerned. There is a fresh water shower pipe inside of the screen near the top which washes every screen plate every revolution of the screen. Underneath the shower pipe is a trough to catch the water and dirt or strings and drain them off so they do not get into the paper. The screen plates have .022 (twenty-two one thousandths part of an inch) openings or slits through which the stock and water pass. The screen is so constructed that whatever dirt or coarse material that does not get through the slits in the screen plates, settles to the bottom of the screen and automatically passes to the small tail-screen which works in conjunction with the large screen. A small amount of stock goes to the tail screen with the dirt and is here screened out from the dirt and run through a pipe back to the mixing box and used over again. The tail-screen uses flat screen plates and resembles the old flat screens that were in common use on paper machines some years ago. One of the disadvantages of the flat screens was the accumulation of strings and dirt on the plates, causing dirty paper. They could not be cleaned unless the paper machine was shut down while the work was done; consequently, there was a lot of time lost in a month just for cleaning screens. If stock of too high consistency, that is, too thick, is pumped to the screens, it will not screen well; it may even fill up the openings in the plates and run the screen over. The consistency of the screened stock on light weight tissues runs about .18 of one per cent; the balance being water.

So far, without water, it is plain that it would be hard to make paper. Water serves as a vehicle to carry the stock through the pipes from place to place until it finally reaches the paper machine. A single tissue paper machine uses a tremendous amount of water. The stock in the beaters is run at about 5 to 6 per cent consistency. When dumped into the beater tank, it is thinned down with water to between 4 and 5 per cent consistency. Then the automatic regulator thins it down to 2.5 per cent so it will be thin enough to pass through the stuff box and jordan. Then as the stock enters the screen and head box, it is mixed with more water so that on 11 lb. tissue paper there is only .18 of one per cent stock to 99.82 of one per cent water; or in other words, there is less than one pound of stock to 499 pounds of water.

Head Box Designs

The mixture of water and stock runs from the screen into the head box which spreads out and evens up the mixture before it goes out onto the paper machine wire. The head box is made with partitions in it so as to keep the mixture of water and stock thoroughly agitated and mixed. The design of the box has much to do with the mixing; and if it does not mix well, the mixture of water and stock will become flaky or look like it is in bundles or bunches. The fibers have a certain affinity for each other and as soon as the agitation lets up, the fibers flock together and form little bundles or flakes. Whenever the mixture in the box is too heavy, or the stock is too free, or the circulation is sluggish, this lumping or flaking occurs. The head box is built according to the maximum and minimum volume of mixture which will supply the needs of the machine when running both at its maximum and minimum capacity. In other words, the head box

must handle and thoroughly mix and evenly distribute the amount of water and stock needed for high and low speeds and high and low production on the machine. In building a head box to fit the needs of a machine which has a speed range of several hundred feet, the box must be built to fit conditions at the average speed. One box cannot be built to exactly meet the needs of both a fast machine and a slow speed machine. The box may also be built with adjustable partitions or baffles to keep the mixture fast enough and well mixed. Figure 2 is a sketch of a common type head box and also a box with adjustable baffles. The adjustable baffle or gate is marked with a dotted line.

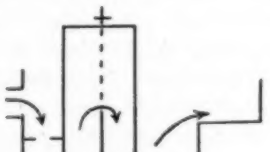


Figure 2

The stock runs from the screen into the first compartment of the box which has a baffle board with 5 inch square holes every 5 inches, the full width of the box. This board spreads out the mixture and causes it to pass down through the opening and underneath the next baffle board evenly distributed across the width of the head box and very well mixed. The more water is agitated and the faster it flows, the more currents it forms. Currents in the flow box and on the paper machine wire have been the cause of much trouble to paper makers. The mixture then passes over the next baffle, under the last baffle and up into the last compartment and out onto the wire. As the stock passes through the first three compartments of the head box, it is necessary to keep it fast and very well mixed. When it enters the last compartment, it is still important to have it well mixed, but at the same time it is much more important to quiet down the fast currents. One of the best ways of doing this is by making the last compartments taper out larger at the top so as to form a large pond or head of water which automatically quiets down because the pond is larger and the water is slower. This gives the unruly currents a chance to slow down. As soon as the water slows down, the fibers begin to settle, but by this time they pass under through the slice onto the wire.

If the mixture slows down too much, the fibers immediately begin to cling to each other and form into bunches or flakes. Under such conditions, a sheet of paper would look flaky or wild on the wire and also after it was made, no matter what was done to make the formation better on the wire.

There is another type of head box made with an adjustable gate reaching all the way across the box. It may be raised or lowered to decrease or increase the agitation of the stock as it passes through the head box. This is shown by the dotted lines in the sketch of the first head box. (Fig. 2).

There is still another type of head box which is of late design and is supposed to do good work. It is made like a large trough 14 inches wide and 15 inches high, with a center baffle board which is adjustable. It also has two brass rolls which are full of holes and revolve to keep the stock well mixed. See Fig. 3. These are now being used on certain grades of book or magazine paper where an excess of water is not required.

The Slice

From the head box the stock runs out over the apron board to the slice blades which act as a dam with a small opening at the bottom to allow the stock to flow onto the wire. The apron board is fitted onto the head box and is covered with apron cloth which reaches out onto the wire in order to close the gap between the apron board and wire.

The old type slice is still in use in many mills. It is made of two brass blades, which overlap in the center for adjustment, and reach across the width of the wire over the breast roll. The bottom edges are perfectly smooth and straight. The slice is used as a gate to dam up the stock and keep up a head. It is adjustable on each end and in the center, and it is raised or lowered as necessary according to the volume or speed of the mixture of stock required to form the sheet of payer on the wire. It is also adjustable for the purpose of leveling up the sheet on the wire. One of the faults of this slice is that where the two blades overlap in the center, a heavy current forms which causes a heavy streak in the paper.

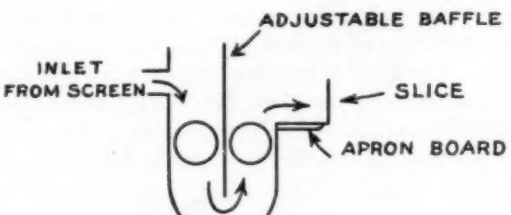


Figure 3

Another fault is that there are only three adjustments; one in the center and one on each end.

The Voith Stock Inlet or slice is a late type which gives good results and has adjustments about every six inches all the way across the width of the machine. This blade sets at an angle and by having the adjustment rods fastened near the tip of the blade, it is possible to spring the blade enough with the adjustment rods to correct any uneven flow on the wire. This type of slice dams up the stock similar to the old type slice except that the blade is always at or near a 45 degree angle; whereas, the old type slice is always at a right angle. The action of the Voith Inlet is also different from the old slice. Instead of having to depend entirely upon flow-weight for the speed of the stock to the wire, it has the advantage of the slice blade set at a sharp

angle which causes the stock to flow out faster and works similar to a high pressure nozzle on a water hose. The height of the head and the flow weight do not have to be as high or as much when using the Voith Stock Inlet as when using the old type slice.

Forming the Sheet on the Wire

For light weight tissue, it is best to use a fine wire; the 80 mesh wire is most commonly used, although 85 and even 90 mesh are used. In forming a sheet of paper on the wire, one of the most important points is to have the stock travel at the same speed as the wire when it flows out from the slice. From the very start of this discussion, we have been talking more or less about putting more water into the stock by diluting and by hydrating it. In the beaters it was beaten or hydrated; water was beaten into it. Then it was diluted with more water and dumped into the beater tank. From here it went to the regulator and more water was added. Then to the jordan and on to the screens and head box where it was diluted still more with water until it finally was in the proportion of about 1 lb. of stock to 449 lbs. of water.

From this point on, the process changes. The instant the stock flows out on the wire and forms into a sheet of paper, the process changes to one of getting the water out of the sheet. All along the line from one operation to another, more water is gradually taken from the sheet. The tube rolls running underneath the wire draw out most of the water as the wire runs over them. The more tube rolls there are, of course, the more water will be taken from the sheet; and the more tube rolls there are, the longer the wire must be of necessity. Water is drawn through the wire by the capillary attraction of the tube rolls. The wire then passes over three vacuum boxes which suck more of the water out of the sheet. By this time, enough water has been taken from the sheet so that it is firm and will hang together.

The question may come up as to why so much water was put into the stock when it must all be taken out again. The main reason is that water must be beaten into the fibers so they will carry enough water with them through the screens and head box and also retain or hold this water long enough to form a good sheet of paper on the wire. Stock used for tissue paper is considered comparatively as free stock; this is, stock which has not been hydrated much. However, the fibers must be hydrated enough so that they will remain in suspension on the wire long enough to form a sheet and they must also be refined enough so as to have some filler as well as a good matt of long fibers so that there will be a good body on which to build a good sheet of paper. A sheet of paper which has not a good body will not stand the abuse which it must take of necessity as it passes through the machine and is couched, pressed and dried out.

As the mixture of water and stock flows out on the wire, the fibers are very well mixed and hydrated enough so that they will remain in "suspension" for a short time in order to form on the wire. At this point, the stock looks more like a mass of jelly than anything else. The fibers immediately begin to settle on the wire and form a "matt of fibers" which in reality is the body or frame work of the sheet. The crossing and interlocking of fibers is helped by using a "shake" on this end of the wire. This forming of the sheet all takes place on the first five or six feet of the wire. If the sheet is not well formed here, it never is well formed, because it cannot be formed anywhere else on the wire. The rest is simply a question of gradually removing the water from the sheet.

In forming a sheet on the wire, the drainage capacity must be considered. If too much water is used for the drainage capacity of the wire, it is not always possible to get the water out. Even should the water be taken out farther down on the wire, the formation would not be so good. As pointed out before, the body of the sheet is formed on the first five or six feet of the wire. There is still a multitude of "fibers in suspension" over the matt of fibers or body of the sheet. As the wire travels on, these fibers which are still in suspension, gain speed or momentum and travel faster than the wire. The result is that they roll on top of the body of the sheet causing a lumpy or flaky appearance in the formation on the top side of the sheet. This takes place, of course, only under a certain set of conditions when using real slow or hydrated stock. If too much water is used when the stock is very free, that is when it is hydrated very little, the body of the sheet will not even form properly on the wire. The fibers will not remain in suspension long; they settle quickly, forming a matt, but the water rushes on, rolling the fibers into lumps or flakes. This gies the sheet of paper a wild or flaky formation.

There is a prevalent idea that to put more water into the sheet will give better formation. Under a very definite set of conditions, this is perfectly all right. Under other conditions, this idea is all wrong. If the hydration of the stock is right and not enough water is used in the sheet, the effect is just the opposite of when too much water is used. Instead of having a rolling effect, we have a lagging effect; the stock runs slower than the wire causing the sheet to look flaky. This is caused because the momentum of the volume of stock is not great enough to stay with the speed of the wire long enough to form a body of the sheet.

Lagging of the stock may also be caused by the stock not being dammed up high enough behind the slice to give the correct speed to the flow as it runs

(Continued on page 446-a)

Current Thought by William Sibley

Advertising

LAST month Major O. M. Porter, secretary-treasurer of the American Paper and Pulp Association, stated in convention assembled, that there was immediate and crying need for a national survey of paper distribution, and that he was strongly in favor of the establishment of a central advertising pool and the inauguration of a national advertising campaign designed to establish more clearly the exact province and importance of paper as a commodity and to make the consuming-public completely "paper conscious."

We can conceive of nothing of more importance to the paper industry than these things touched upon by Major Porter—save possibly, the research activity advocated by Secretary Frank E. Floyd of the National Paper Trade Association. Perhaps there can be no more important move than the discovery and development of new and strange ways in which to use paper. Research activity that would disclose and develop methods and ways for the **additional** use of our product would perhaps do more, by itself, to iron out some of the paper industry's difficulties, than anything else. We touched upon the need for and value of research in these pages just a few months ago. At that time, we found pleasure in telling of just two or three things that had been done by three prominent manufacturers and in pointing out the tremendous value of such research. If it be in order, THE PAPER INDUSTRY would like to rise and second the recommendations of Mr Floyd.

Is there any reason, however, why both research and national advertising cannot be carried forward simultaneously? One is needed quite as badly as the other. The ideas of Major Porter and Mr. Floyd might well go hand in hand; indeed, should do so if the money and energy invested in both are to yield the greatest return. Co-operative, industry-wide, national advertising is now an absolute necessity. More than 100 separate industries are carrying forward co-operative, national advertising. This means that if our product is to meet and overcome the competition of countless other products, co-operative advertising and sales promotional effort is a basic essential. With your anticipated permission, I will advance a few thoughts regarding co-operative advertising in these pages next month. Not only will I attempt to point out the need for and value of such effort, but show exactly where other industries have failed and what mistakes we may well avoid.

In this issue I should like to discuss individual company advertising—a subject ever new. Of course, I can touch on only one or two principles in such a brief article. However, I want to give you the reactions of a friend of mine who has spent years in the capacity of a paper buyer for one of the largest printing establishments in the middle west. His statement, quoted below, is worth while, I believe, because it affords the outsider's viewpoint to problems we have long considered our own, and, as is so often the case, this outside viewpoint provides a broader perspective. My paperbuying friend has said:

> "During my 20 years' experience, paper manufacturers have spent an enormous amount of money in what they consider advertising, and I must truthfully, though regretfully say, that during that long period **only two campaigns now stand out in my mind.** These, incidentally, were developed and carried out by manufacturers who today are leaders in their respective fields.
>
> "I have had an intimate contact with printers, binders, paper jobbers and paper manufacturers during my 20 years of service. I handled one paper manufacturer's campaign in its entirety and participated in the preparation of many, many sample books for countless jobbers and paper manufacturers.
>
> "There are three methods of advertising used by the manufacturers:
>
> 1—A very few are using some national advertising in magazines with a general circulation—mainly on the part of the larger manufacturers who have a sufficiently diversified line to appeal to all types of paper buyers.
>
> 2—Space in trade journals which is more or less 'reminder' advertising and which, I believe to be very good.
>
> 3—Sample books and direct mail pieces. I venture to say that the bulk of all advertising budgets is spent this way.
>
> "The companies which can profitably use national advertising are very few and I think we are all agreed that trade paper advertising is a good expenditure—so items 1 and 2 can be dismissed. The third method covering sample books and direct mail is certainly open to a vast amount of criticism. It is wasteful and seldom productive of good results. This because there

is too frequently a lack of plan, which is essential to profit in anything.

"In the first place, sample books are sometimes mailed, but more frequently personally handed out by the paper salesman to a few selected individuals in a printing plant. The printing plant will always be the biggest source of orders for the paper manufacturer and jobber. The samples are usually given to the estimator, or sometimes the stockman and then they go into the file to be consulted when occasion demands—maybe never. The samples are, in most cases, fine examples of printing. A practical printer can sometimes get enthused about the beautiful way in which the plates print and the fine tones of ink are brought out. And that's as far as the message goes.

"Usually, when a paper manufacturer wants to get out a sample book, he consults a printer whom he feels can do a creditable job of press work. The printer goes through his plate files and selects a series of illustrations which have accumulated from his customers' jobs. A selection of these—four color process plates—several good, deep etched, contrasty halftones and a few zinc illustrations for decoration—make the beginning of a fine sample book. Perhaps a page or two is devoted to a nice Caslon set-up extolling the virtues of the stock for printing purposes, but by and large, there is seldom much constructive thought given to this, all too often, only effort.

"The selling of paper needs a Renaissance, because the methods employed today are identical with those in use 20 years ago when I first entered the printing business. Modern salesmanship was advanced tremendously. Good salesmen recognize that they not only must sell merchandise, but to do a constructive job must help their customers make money from that merchandise. Dealer helps have sprung up to a degree that make it well nigh impossible for a dealer of ordinary business sense to fail to sell merchandise if he follows out the sales promotion plans presented by the average manufacturer. But paper selling, except for a very few outstanding exceptions, continues to plod along in its own mud road.

"If I Were a Paper Manufacturer"

"If I were a paper manufacturer, I would employ a competent advertising man or an advertising agency, let him develop an honest-to-goodness plan—then rigidly adhere to it. I would keep in mind that paper is a major element in every printing job—that it has a very definite part to play in helping get the advertiser's message across. It is the clothes of the message. Additionally, I would have a definite style of illustration developed, with a slogan or heading that would become a word of mouth phrase with every printer so that he would always be conscious of the fact that my paper was in existence. It would not require large expenditure of money to firmly establish that slogan or thought.

"A real, first-class designer should be in consultation on the plan—one who is thoroughly familiar with the problems of a printing fraternity. With this help, I should develop a series of mailing pieces that would actually **help** the printer, the advertising agency man, the private advertiser, and everyone else interested in advertising. These books or folders would give tangible reasons for the use of better papers where texture, feel and appearance are an important link in getting the advertised message over. Then I would secure the names and the **home addresses** of not only the estimators and the men responsible for the purchasing of stocks in printing plants, but also the names and addresses of the printing plant executives, production managers of advertising agencies, individual company advertising managers and others. These men do not get any great quantity of mail at home so they will not feel offended if asked to take a few minutes at their own fireside to read my story. But the story must be constructive—it must give him ideas and possibilities that he has overlooked. It must put him in a frame of mind that he will start scanning the output of his own plant the next morning and begin to wonder if he is merely doing a printin' job instead of contributing a part of the successful advertising of his own customers' products."

I am glad my paper-buying acquaintance mentioned the need for constructive, educational, helpful material. Too much emphasis cannot be laid on the necessity for doing an educational job. Mechanical perfection is secondary to the text material,—present sample books and advertising literature to the contrary notwithstanding. Too many of us devote out entire energies to gaining the assurance that the sample book will be mechanically perfect. So obsessed are we with the idea that to sell printers we must show them work that is superior to what they themselves can do, that we entirely overlook the fact that printers, advertising agency men, advertising managers, and everyone else are merely human beings in need of education regarding procedure, methods, ways and means, and little how-to-do-it kinks that will save money and time. The sample books and literature now turned out are beautifully printed, mechanically perfect, specimens of printing and engraving. **But they don't sell paper,** or help iron out our difficulties. Cut-throat printers continue, just as always, to underbid competitors, knowing they can substitute papers and rely upon the customer's ignorance of paper qualities to "get by". Our present sample books and literature are beautiful—but like the old-time, hand-engraved Swiss watch, they are regretfully filed away in the family vault while a $10 Elgin is used in its place. All this can be corrected. without large expenditures of money, if the problem is attacked properly.

This industry needs two things:

1—Better and more constructive individual advertising, and

2—Co-operative national advertising.

The above quotation is offered for what it is worth with regard to the first named. I will discuss co-operative national advertising at some length in these pages next month.

Wood Preservation

2---Its Influence on Reforestation and on the Industries That Depend Upon Forest Products

By JOHN G. KREER

Vice President and Technician of American Wood Impregnation Corporation

MANKIND retains an inherited and almost instinctive admiration and affection for trees. The most hardened city dweller rejoices in the experience of the splendors of a fine forest and is vaguely conscious of the friendly helpful part that the woods play in the development of our race, dimly aware of the tremendous contribution they make to our past, present and future welfare and comforts.

Pioneer conditions tended to obscure for several generations of American life this deep-rooted knowledge of the importance of the forest to human existence. That which is too plentiful and easy of access loses in our esteem for its actual value, and to the settlers of an hundred years ago the vast extent of our timber growths seemed illimitable and inexhaustible. The urgent need of dependable food supply for the fast growing population demanded the clearing of close-by lands and a tremendous program of construction for homes, for roadbeds of the railroads, for telegraph pole lines, for docks and other structures, recruited and organized an army of woodsmen who waged a relentless, unintermittent and destructive warfare upon the forests for the spoils of timber that they garnered.

Inevitably, in the face of such plentiful supply of raw material, wasteful methods obtained. Labor was more valuable than trees, and the easier way was followed. Only the very best of the wood was used, all the balance being destroyed since there was no one to want it.

Corner of the tree nursery on a German country estate. Forest culture is widespread even amongst private individuals. To the left is the forester who is in charge of the woods on this 3000 acre property

Turning for a moment to statistical data, we find in the reports of the United States Forest Service that the original stand of virgin timber in this country amounted to some 5,200 billion feet, while in the past 70 years more than 3,600 billion feet has been cut; 70 per cent in 70 years. And our present rate of cutting represents a depletion of about six times the average of those past years, amounting to more than four times the annual growth of all our woods.

Jetty work at Baranquilla, Venezuela, rescued from termite attack by the use of Wolman Salts

For particular localities and for certain industries the exhaustion of nearby supplies has had almost disastrous effects. And while adjustments have been made to continue operations under the new conditions, it is becoming increasingly difficult to do so.

Forty years ago Michigan, with its more than four billion feet yearly, was the principal lumber producing state of the union; now it is importing more than 70 per cent of what it consumes, a large portion coming from Texas or the Pacific Coast, on which a freight charge of as much as $18 per thousand has to be paid. On the lower grades of merchantable lumber this burden of freight is twice as much as the manufacturer receives for production. A committee report in 1923 of the Chamber of Commerce of the United States estimates the added freight charges on the lumber consumed annually in the City of Chicago and vicinity, based on lengthened haul alone and not on freight advances, to be $22,000,000 over what it was some years ago, and what it now would be if there were a supply of timber growing near that great industrial center.

It is true that in some directions there have been acceptable substitutes for lumber developed, and the percapita consumption has dropped from the peak of 500 bd. ft. annually, reached some twenty years ago, to less than 400 bd. ft. But this has not been

wholly a sound economic advantage, and many of the substitutes have come into use only because the lumber industry has been remiss in the task of providing suitable lumber that will acceptably serve the needs of the consumer. Some of the substitutes are falling far short of the usefulness promised by overenthusiastic promoters, and as the lumber industry has found methods to overcome the one vital objection, premature decay or rotting that is inherently likely to occur in locations exposed to moisture, wood is being restored to its proper place as the most generally useful and valuable of our materials of construction and capable of enduring service.

Increasing Consumption Demands Reforestation

Population is steadily increasing, more than offsetting the lessened per capita requirements; new uses for wood are appearing, the paper industry alone having almost trebled its consumption in twenty years past, so that now nearly four billion board feet are used annually for wood pulp.

In a recent address at Beaver Dam, Wisconsin, an official of the state pointed to the inevitable loss of wood using industries employing 120,000 men unless immediate steps were taken to provide raw material within the state by reforestation.

But however urgent the economic need of prompt action in reforestation may be recognized to be, it can not be undertaken by private enterprise unless it can be shown to be profitable, and that the prospects of profit are not too remote to be attractive.

Many of the conditions now are favorable. Money is cheap enough to make the growing of trees offer a better return than in other directions. The National Forestry Service has been gathering technical information and experience for many years and has

Tramcars loaded with roof planks to be wolmanized. Part of one charge of about 20,000 bd. ft. handled 4 to 6 times a day in this 131-foot long retort. Operation is on 24 hour basis

trained large numbers of men who are fitted to undertake the practical management of such undertakings. State forestry schools are further spreading the information that has been gathered and training young men to carry on such work. The states most concerned have already passed laws, or are ready to do so, that relieve the burden of taxation on reforested land. Insurance companies express a willingness to recognize the added security, or lessened risk of fire loss, that is provided by proper up-to-date methods of forestation, and to make materially reduced insurance rates when such methods are employed. An increasing acquaintance with the satisfactory results attained in Europe, and from isolated instances of reforestation in this country, is leading to more encouragement and a better prospect of help from bankers as well as from government agencies, so that a number of ambitious plans are being worked on and may be expected to multiply rapidly when once the way has been cleared of the old inhibiting factors.

Preservation of Wood Aids Forestry Program

Wood preservation might upon superficial consideration be thought to be inimical to progress in the growing of timber as a crop. To make wood permanent so that it would continue in use for many times the life of untreated material, would seem to lessen the future market by eliminating the constant replacements of the decaying structures.

Expensive and ineffective attempt at preservation of telephone line poles. Decay at concrete line just as bad as it would have been at ground line

In reality the recent developments in wood preservation offer one of the most attractive arguments for a reforestation program, opening up an unexpected field of usefulness for quick-growing timber in the form of preservative treated lumber, and thus providing for an early revenue producing income such as has not before been taken into consideration.

There are varieties of loblolly pine, for instance, that will add almost an inch of diameter in a single year to their growth, and one of the New Zealand pines grows about as fast while producing wood of a very superior texture. Forest culture too, adds to the value of the ultimate product with straighter better grown stems, as a result of correct spacing and choice of ground suitable to the particular variety of trees. In Switzerland, the writer found a remarkably favorable fruition from experiments

started forty years ago with our western firs, the time element being even less than in the Pacific Northwest, the lumber cut from the trees having most desirable properties.

The trouble with all of the fast growing trees has been that the lumber produced from them is peculiarly liable to decay. Our experience even with dense second growth or sappy pine has been that there is grave risk in making use of it for permanent structures of any kind if there is any marked degree of exposure to conditions of surrounding moisture, unless the wood has been first protected by chemical treatment.

Since the introduction of Wolmanized lumber into widespread use in the United States, the market has increased for these less expensive varieties of timber. For many purposes, they possess characteristics as useful as those of any other kind of lumber, when once they have been securely and dependably protected against the possibility of decay. Such wood is much more easily penetrated by the impregnating solutions used in treatment than lumber with a considerable heart content, and a complete uniform distribution of the protecting toxic material can be secured.

It is evident that a program of forest culture which looks for its first crop only after some 75 years, will make only a limited appeal to private undertaking. When, however, the 75-year crop can be diversified so that income can be assured in 20, 30 and 40 years and an assured permanent market is provided for wood that can be raised in that time, then private investment in forest development becomes more practical and attractive.

That is the contribution of wood preservation, and particularly of the Wolman Salts which are being applied to and are specially suitable for construction lumber, towards the real progress of reforestation and of forest conservation.

Conservation of the forests and preservation of the forest products naturally go hand in hand, and it is not without justification that wood preservation claims to have advanced the cause of forest conservation by one or more generations.

Michigan and Wisconsin each have many millions of acres of waste land that are admirably suited to the growth of forests, and there is another million or more acres in Illinois. Similar tracts occur within reach of all the main industrial centers where lumber is needed, and it seems incredible that these lands will be allowed to lie idle and non-productive much longer, when they might be engaged in the production of one of our essential raw materials.

Situation as Seen 20 Years Ago

Just 20 years ago, the U. S. Department of Agriculture under Secretary James Wilson issued a bulletin from which the following summary is quoted:

"The cost of wood today is a big item to every farmer, every railroad manager, every mine owner—to everyone in fact who must use timber where it is likely to decay. How to reduce the expense of fence posts, railroad ties, mine timbers, telegraph poles and other timbers which must be constantly replaced has become a vital problem. The kinds of timber used for these purposes are becoming scarcer and scarcer, and their prices higher and higher. Long misuse of the forest has brought its sure results. Even with the most efficient management, it would be a long time before the supply of the best timbers would increase in quantity or decrease in price.

"There are two ways in which the situation may be met. One is to prolong the life of the forest by wise use; the other is to prolong the life of timbers in service by treating them with some preservative.

"It is easy to see that if the length of time timbers can be used is doubled, only half as much timber will be required as before and only half as much money will need to be spent in the purchase of timber. This is the chief gain in treating wood with preservatives. Yet there is another and important one. Many woods, which for a long time were considered almost worthless, can be treated and made to outlast the scarcer and more expensive kinds. This of course means that the consumer will have the choice of a much greater number of woods than he had before and at less cost.

"Wood preservation, then, prolongs the life of timbers in use, reduces their cost, and gives to the user a wider choice of woods than ever before.

"In the South the cheap and abundant loblolly pine, one of the easiest of all woods to treat, can by proper preparation be made to take the place of the high-grade long leaf pine for many purposes. Black and tupelo gums and other little used woods have a new and increasing importance because of the possibility of preserving them from decay at small cost. In the Northeastern and Lake States are tamarack, hemlock, beech, birch and maple, and the red and black oaks, all of which by treatment may be made to help to replace the fast-diminishing white oak and cedar. And in the States of the Mississippi Valley, the fencepost problem may be greatly relieved by treating such species as cottonwood, willow and elm."

This was written just at the time that the earliest installations of wolmanized lumber had proved the efficacy of Dr. Wolman's wood preservative inventions and he had perfected the fluoride-phenol com-

(*Continued on page 446-a*)

The Paper Industry 1928 Safety Contest

Accumulative Scores, January 1 to April 30, 1928

13 Mills Have Perfect Record

PERFECT SCORES

	PARTICIPANT	MILL	LOCATION
Group A	Kimberly-Clark Co.	Badger-Globe	Neenah, Wis.
Group B	Finch, Pruyn & Co., Inc.	Glens Falls	New York
Group C	American Writing Paper Co., Inc.	Linden Division	Holyoke, Mass.
	Marinette & Menominee Paper Co.	Menominee	Wisconsin
	Defiance Paper Co.	Mill No. 2	Niagara Falls, N. Y.
	Kimberly-Clark Co.	Atlas	Wisconsin
	Gardner & Harvey Co.	Mill No. 3	Middletown, Ohio
	United States Gypsum Co.	N. Kansas City	Missouri
	Sorg-Oglesby-Smith Paper Co.	Smith	Middletown, Ohio
	Kimberly-Clark Co.	Neenah	Wisconsin
	United States Gypsum Co.	Gypsum	Ohio
	International Paper Co.	Riley	Maine
	United States Gypsum Co.	Lancaster	Ohio

IMPERFECT SCORES

GROUP A				GROUP B				GROUP C			
		Points				Points				Points	
Key	Rank	Credit	Debit	Key	Rank	Credit	Debit	Key	Rank	Credit	Debit
A- 6	2	572.715		B- 1	2	580.452		C-37	12	468.785	
A- 7	3	529.300		B-16	3	512.915		C- 9	13	450.570	
A-15	4	488.345		B-10	4	511.885		C-32	14	442.285	
A-12	5	457.015		B- 3	5	504.385		C-49	15	423.485	
A-11	6	443.800		B-18	6	493.285		C-12	16	420.585	
A-14	7	431.245		B-21	7	447.400		C-26	17	390.085	
A- 9	8	426.830		B-33	8	444.100		C-44	18	387.115	
A-10	9	322.070		B-25	9	443.253		C-46	19	356.985	
A- 8	10	305.800		B-15	10	438.735		C-28	20	324.515	
A-22	11	300.770		B-26	11	431.830		C-47	21	320.770	
A- 3	12	255.285		B-11	12	412.600		C-13	22	303.215	
A- 5	13	252.755		B-23	13	325.915		C-52	23	244.700	
A- 1	14	242.870		B-24	14	283.685		C-55	24	224.370	
A-16	15	173.415		B- 2	15	274.300		C-40	25	214.900	
A-24	16	42.270		B-17	16	262.730		C-54	26	188.245	
A- 4	17	13.970		B-27	17	252.970		C-42	27	167.955	
A-26	18		83.600	B-22	18	208.915		C-17	28	144.955	
A- 2	19		167.115	B-28	19	185.745		C-24	29	135.870	
A-18	20		231.985	B-31	20	160.955		C-38	30	85.300	
A-21	21		441.070	B- 5	21	155.170		C-20	31	46.755	
A-23	22		771.470	B-14	22	130.515		C-43	32	37.730	
A-20	23		990.445	B- 4	23	66.100		C-35	33	12.470	
				B-29	24	63.670		C-51	34		18.600
				B-32	25	5.970		C-45	35		23.500
				B- 6	26		11.330	C-61	36		39.870
				B-36	27		98.415	C-11	37		46.630
				B-34	28		164.000	C-10	38		75.230
				B-12	29		190.485	C- 1	39		83.800
				B-35	30		280.300	C-25	40		110.770
				B-30	31		537.900	C-34	41		125.645
				B- 9	32		859.870	C- 8	42		135.815
								C-16	43		152.800
								C-23	44		156.015
								C-59	45		167.345
								C-60	46		202.800
								C-22	47		264.055
								C-50	48		347.670
								C-14	49		351.670
								C- 2	50		368.315
								C- 3	51		399.545
								C-19	52		427.415
								C-31	53		580.630
								C-21	54		673.085
								C-48	55		758.545
								C-18	56		766.485
								C-33	57		809.030
								C- 7	58		878.185
								C- 6	59		1143.245
								C- 4	60		1264.545

Outstanding Reports: A-25, A-17
B-7, B-8, B-13, B-19

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of April 30, 1928

Participant	Mill	Rate
Kimberly-Clark Co.	Neenah	0*
International Paper Co.	Riley	0
United States Gypsum Co.	Gypsum	0
The Upson Co.	Board Mill	.05
Kimberly-Clark Co.	Atlas	.07
International Paper Co.	Webster No. 9	.12
Gardner & Harvey Co.	Mill No. 1	.17
Gardner & Harvey Co.	Mill No. 3	.19
Adams Bag Co.	Chagrin Falls	.20
International Paper Co.	Winnipiseogee	.24
Bergstrom Paper Co.	Neenah	.26
Gardner & Harvey Co.	Mill No. 2	.34
Union Bag & Paper Corp.	Allen	.41
International Paper Co.	Livermore	.45
Lincoln Pulp & Paper Co.	Lincoln	.47
Robertson Paper Co.	Montville	.49
Union Bag & Paper Corp.	Mill No. 5	.52
Lincoln Pulp & Paper Co.	Lybster	.64
Itasca Paper Co.	Minnesota	.64
Mead Pulp & Paper Co.	Peerless	.74
Union Bag & Paper Corp.	Fenimore	2.59
Northwest Pulp & Paper Co.	Brainerd	2.68
Lincoln Pulp & Paper Co.	Sulphite	3.23
Group B—International Paper Co., Niagara Falls		.25
Group A—Neekoosa-Edwards Paper Co., Combined Mills		.64

Wood Preservation

(Continued from page 446)

bination known as Triolith. Five years later Triolith was being used in Germany, Switzerland, Sweden and Denmark, but it was not brought to the United States before the war broke out to delay its introduction here until 1923. Now, with more than twenty years of history of dependable performance in the effective preservation of timbers in the most exposed locations, Wolman Salts are known all over the world; architects, engineers and designers specify wolmanized lumber for permanent structures and by waiving heart specifications and other costly limitations on the kind of lumber that were intended to secure some degree of protection against decay in the untreated material, are realizing the benefits that were predicted by Secretary Wilson almost a generation ago.

The Yankee Machine

(Continued from page 441)

out onto the wire. If lagging of the stock occurs when the stock is free (that is, hydrated very little), we have a very flaky or wild formation in the sheet of paper because the fibers hardly stay in suspension at all during the time the sheet should be forming on the wire. The fibers immediately settle, and with the wire running faster than the stock is flowing onto it, the matt of fibers is simply dragged apart causing an extremly flaky or wild sheet. Running at high speeds, it is necessary to run with a pitch on the wire, or in other words, to run the wire down hill. This is necessary because otherwise so great a volume of water would be required to keep the speed of the stock with the speed of the wire that it would be almost impossible to get the water out of the sheet.

Fox River Valley Safety Conference

Large Attendance Hear Inspiring Addresses in Well Arranged Program

SINCE the first get-together that was held in Green Bay on December 9, 1925, the Fox River Valley Safety Conference has become an annual occurrence and perhaps what it is hoped to be termed—a permanent institution in the industrial activities of that great manufacturing section of the State of Wisconsin.

The fourth annual conference of this movement was held in the City of Oshkosh on Wednesday, June 6, 1928; and in every respect it was a great success. The exceptionally pleasant day brought a great number to the meeting from the neighboring cities in the Valley and by noon close to eight hundred people had registered at headquarters in the Recreational Building.

Nothing had been overlooked by the committee on arrangements to make this event an enjoyable one and of great educational benefit. Members of the Oshkosh Chamber of Commerce were on hand to take the visitors between sessions to points of interest around the City, and those who took this opportunity were impressed with the great number of large manufacturing plants, every one of which seemed to be of the tidyness that spoke of safety, the beautiful public buildings including a fine vocational training school, and in general, the cleanliness and order of this attractive city of forty thousand on the shores of Lake Winnebago—the largest body of fresh water within the boundaries of any one state in the Union.

The success of the conference was due entirely to the fine spirit of enthusiasm and co-operation on the part of the following organizations which assisted the local chamber of commerce: Industrial Commission of Wisconsin; the Paper and pulp, Woodworking, Public Utilities, Electric Railways, Rubber, Metals and Power and Press Sections of the National Safety Council; the "On Wisconsin Ass'n" and Compensation Insurance Companies of the National Safety Council; Wisconsin Manufacturers' Ass'n; National Electric Light Ass'n; the Oshkosh Vocational School, and the manufacturers and employees of Oshkosh, Appleton, Sheboygan, Neenah, Menasha, Fond du Lac, Green Bay, Kaukauna, Kohler, Manitowoc, and other cities.

The conference was divided into four sections, namely, Pulp and Paper, Metal, Woodworking and Public Utility, each of which held a meeting in a different place during the forenoon. Following luncheons for each section, there was a joint meeting in the afternoon and another in the evening. Group suppers were also a part of the program.

PULP AND PAPER MEETING

The meeting of the Pulp and Paper Section was opened promptly at 9:45 A. M. in the Fischer Theatre, by Chairman W. F. Ashe of Thilmany Pulp and Paper Co., Kaukauna, Wis. There were 205 in attendance.

In his opening remarks, Mr. Ashe expressed as his keynote, the belief that since about all has been said and done in former conferences to expound on the service and need of machine guards to prevent accidents, and since it is well known that industrial accidents attributed to causes other than the lack of mechanical safe-guards, average more than eighty per cent of all such accidents, if future conferences on Safety are to succeed, they must hereafter major on the need for training the minds of industrial workers to bring them into what is termed a state of Safety consciousness. He referred to Safety as being not so much a game as it is a part of the production program, in which all employees should receive continuous training.

The experience rating clause in compensation insurance policies, by which the insured are enabled to obtain reductions in premium rates according to reductions made in lost time accidents, was the thing which management looked to as their means to provide for Safety Costs. Mr. Ashe stated that during the past two years, his own company had obtained enough credit through experience rating to pay their entire Safety costs.

Following up what he had said about the educational side of safety, Mr. Ashe introduced as the first speaker on the program, Mr. H. G. Noyes, coordinator of the Wisconsin Vocational Schools, one whom he said every one present knew was able to deal well with his subject, "The Foreman—A Teacher of Safety."

The Foreman—A Teacher of Safety

Mr. Noyes sketched the analogy between a school and a manufacturing plant, in which management represents the principal of a school, the foremen its teachers, and the pupils are the workers. The axiom that unless a man knows his subject he cannot teach holds true of the foreman. Unless the foreman makes a study of the machine and all of its operations and all of the men connected with its operations, it is impossible for him to function 100 per cent as a teacher. In order to teach the pupil or workmen, the latter must be put in the proper receptive attitude and the **foreman must impart knowledge in such a manner that the worker will learn it.**

In successful instruction, there are two elements—what to teach, and how to impart it. In every lesson, whether it be in factory or school, there are four steps—preparation, presentation, application and inspection. In the first step, the foreman establishes a foundation for teaching a new idea. In presenting this idea, it may be done on the job with one individual or groups of individuals, or if necessary some systematic scheme of training may be devised for teaching this idea. In any event, a distinction should be made between **teaching and telling.** Demonstration, illustration and experiment are probably the best methods to be employed. The foreman should see that the worker applies the knowledge gained and the lesson is never completed without inspection of the work by the teacher or foreman in his supervision of the worker on the job.

There being no discussion of Mr. Noyes' address, the chairman closed the subject by expressing the thanks of the meeting for his instructive talk and stating that unquestionably all mills having foremen must make them as efficient as possible, and to keep them so day after day.

Safety Council Officials Introduced

William J. Peacock, Chairman of the Pulp and Paper Section of the National Safety Council, was then called upon. He said that the program for the national meeting of the Pulp and Paper Section to be held in New York City October 1 to 5, 1928, had been practically completed under the direction of Franz Rosebush, chairman of the program committee. It is hoped, he said, that the New York meeting will be the biggest that has ever been held by the Section.

George E. Burns, of the National Safey Council, was next introduced by the chairman as one who had been very helpful in arranging the program of the conference. He spoke about the 1928 Paper Industry Safety Contest, in which 124 mills were entered, and announced some of the accumulative ranking figures that will be found on the Safety Contest page in another section of this issue. Wisconsin mills, he said, held the lead in the number of those registered in the Contest, Massachusetts mills running a close second. He gave some figures to show there had been a reduction of accidents during the first four months of this year compared to the corresponding period in 1927.

Franz H. Rosebush, manager of industrial relations, Nekoosa-Edwards Paper Co., Port Edwards, Wis., seconded what Mr. Noyes had previously covered in his address con-

cerning the foreman's duty to instruct his men as the most important part of the forman's job. He said that the regional meetings of the Pulp and Paper Section of the National Safety Council had proved to be a great help in the work that the Council was trying to do, and that the New York program was going to be a good one.

Life, Health and Pursuit of Happiness

The next speaker on the program was Commissioner Voyta Wrabetz of the Industrial Commission of Wisconsin, whose subject was, "Life, Health and the Pursuit of Happiness".

Mr. Wrabetz said that after all, Compensation is merely safety in the event of accidents; the most important function of compensation in relation to accident prevention was his subject, "Life, Health and the Pursuit of Happiness." He drew a picture of ancient times when the pyramids and tombs for kings were built; when human life was not worth much and was sacrificed for the attainment of a great material purpose. This was changed during the Christian era, and later the struggle for the recognition of human lives was written in the Constitution of the United States as a plea for life, liberty and the pursuit of happiness.

The success which followed our declaration of political freedom grew into the building of a great industrial nation, and soon again the desired accomplishments were often obtained at the expense of people's lives. There came a time when there was a great change in American industry and the attitude of employers toward men was in the light of them being human and not machines. New declarations of life have been written into industrial codes, and industry has assumed the responsibility of the saving of human life through accident prevention methods and education.

The pulp and paper industry is an important one in the State of Wisconsin. In the 1925 census of manufacturers, there were 57 mills employing 13,705 wage earners, to whom the sum of $16,408,497 was paid. The value of the products of these mills in that year was $97,779,601. Pure premiums compiled by the National Council of Compensation Insurance Companies are the lowest in Wisconsin, being $1.47 as compared to $1.71 for Michigan, $1.82 for Minnesota and $2.37 for Illinois. The accident prevention work which has been done by the mills in Wisconsin, has produced wonderful results and the fact that there was but one accident in the State during 1927 caused by a violation of safety orders relative to papermaking machinery, is most gratifying. As a result of this accident, the company's premium rate was raised to $4.02. Due to reduction in lost time accidents on the part of many mills in the State, the experience rating clause in the compensation insurance policies has enabled many of the mills to make large reductions in their insurance premiums. Accident records have proven that about 17 per cent could have been avoided through the use of mechanical safeguards, leaving 83 per cent which were attributable to mental causes. The responsibility, therefore, lies in management's hands to train the minds of industrial workers that they may enjoy the full right to life, liberty and the pursuit of happiness.

In the discussion, it was brought out that it was necessary to place the right kind of a man on the job and the fellow who gets a lot out of his job is the one who teaches another.

In the absence of L. J. Parrish of the A. O. Smith Corporation, Milwaukee, whose subject was to have been "A Safety Philosophy", Frank C. Dana, manager of personnel of the Goodman Manufacturing Co., Chicago, substituted with a talk, dwelling principally on appreciation of the value of Safety.

AFTERNOON SESSION

There was a joint session of all sections in the Recreational Building, starting at 2:00 P. M. The meeting was called promptly to order by Chairman R. G. Knutson, Commissioner, Wisconsin Industrial Commission, who was followed by the Hon. H. F. Kitz, Mayor of Oshkosh, who gave a most cordial address of welcome.

Following this, there was a presentation of prizes to grade and high school students who had entered into a poster contest. Some very fine work was created as a result of the students' efforts. A large green flag was then awarded to the City of Oshkosh as the winner in an inter-city safety contest. This contest was engaged in by the cities of Green Bay, Sheboygan and Oshkosh on the basis of accident frequency during the months of March and April, 1928 as compared with 1927. All three cities showed reductions in accidents this year over last, the greatest reduction being credited to the City of Oshkosh of 40.91 per cent. The Wisconsin Industrial Commission figures were taken, which considered only those lost time accidents involving seven or more days of disability. The reduction of these cities was as follows:

	No. of accidents March & April 1927	No. of accidents March & April 1928	Per cent reduction
Green Bay	55	47	14.64
Sheboygan	54	39	27.77
Oshkosh	44	26	40.91

The banner having been presented by Commissioner Knutson, was accepted by the president of the Chamber of Commerce, who expressed pride on behalf of the City. The Foreman's Safety School was given great credit for their help in accident prevention. Oshkosh industries have now been sold on the subject, and a larger foreman's school in that city can be expected next year.

A Safety Program that Works

The next speaker on the program was J. B. Gibson, chief of safety and health, Western Electric Co., Chicago, whose subject was "A Safety Program that Works". Mr. Gibson said that in his company, employing 25,000 people, the lost time accidents in 1925 were 4.5 per 1000 employees per month, and that in 1927 this had been reduced to 1.2 per thousand employees per month. During the month of May, this year, the company experienced the lowest lost time accident record to date, being 15 lost time accidents among 25,000 people. A large amount of money has been spent by this company for machine guards and the individual is now held responsible. Training has become educational and the safety program is successful for two reasons: first, the management is sold on safety, not only from a standpoint of dollars and cents, but from humanitarian reasons as well; second, the responsibility for accidents has been placed upon the foremen. Much reliance is put on publicity consisting of shop bulletins and safety booklets. Safety competition is recognized as a valuable medium for the reason that every man loves to win, and in competition the spirit is alive. Suggestion boxes are placed around the plant and credit is given to those whose suggestions are adopted for publicity in the plant house organ. First aid training is given serious and careful attention.

Traffic Cop Is Always Right

A most humorous and at the same time instructive talk was given by an entertainer known as Officer Mulcahey of St. Paul, Minn., who spoke on the Subject, "The Traffic Cop Is Always Right". The speaker's highly enjoyable talk kept his listeners in a continuous state of laughter. He brought out the point that investigation has shown that it is not how many laws you can cram into the statutes, but how well those that are there are obeyed. The auto was given as the traffic cop's "ban of existence". He said that the auto nas never done anything to anybody of its own accord, but when the so-called human intelligence gets behind the steering wheel, the trouble begins. Lack of intelligence was illustrated in a story in which an Irishman who was bent in a right angle from the waist line had been advised by his friend Flanagan to visit a doctor. Upon emerging from the doctor's office, the erstwhile afflicted was walking as straight as a broom handle. Upon Flanagan's questioning him as to the cause of his trouble, his friend replied that there was not a thing the matter only that he had his pants buttoned to his vest.

EVENING SESSION

The public was admitted to the evening session which began at 7:00 o'clock in the Recreational Building, opened by

Chairman E. J. Dempsey of Bouch, Hilton, Kluwin & Dempsey of Oshkosh. Prior to the address of the evening, which was heard by an audience of over 1100 persons, a program was given including dances by the Marie Arno Trio of girl dancers and a concert by the employees band of the Payne Lumber Co., Ltd., Oshkosh.

Hon. Glenn Frank Addresses Meeting

Following this, the chairman introduced Hon. Glenn Frank, president of the University of Wisconsin, who gave his audience an inspiring and philosophical address on "Safety."

The philosophy of the subject was expressed in the phrase, "Safety for men's bodies—adventure for men's minds." No industry has reached its highest development until it has provided these things for its working men, President Frank said, expanding the thought there will be no ultimate benefit to humanity by the development of safety devices if there is not a corresponding development for the laborer of a sense of adventure and achievement in his work. In this machine age, he pointed out, there is danger of producing a people without souls, emphasizing that human nature demands variety and starves on routine alone. The ideal job combines necessary routine and variety in nice proportion, he said, stating that every job should include a creative challenge to the working man. Otherwise, safety for men's bodies may be a total loss in a few generations.

President Frank stated, "Today, enlightened self interest is joining hands with social consciousness that is humanizing industry and making the machine age an age in which human beings can live as well as make a living."

The announcement was then made by the chairman that the 1929 Fox River Valley Safety Conference will be held at Manitowoc, the date of which will be announced later.

An Outstanding Paper Research Laboratory

By LIONEL K. ARNOLD

Asst. Chem. Engr., Engineering Experiment Station,
Iowa State College

A PULP and paper board laboratory located in a state which is neither a paper manufacturing center nor a producer of pulp wood is rather unusual. At Iowa State College, Ames, Iowa, almost in the geographical center of a state which is primarily agricultural, there is being built up within the department of Chemical Engineering and the Engineering Experiment Station, a laboratory equipped not only with small scale research equipment, but with a large semi-commercial unit for the production of wall board. This equipment which is being used primarily in the studies on the production of wall board and paper from corn stalks is housed in the new Chemical Engineering Building.

Chemical Engineering Building, Iowa State College

The new building which is approximately one hundred feet square and thirty feet high is of steel frame construction with brick side walls and factory type windows. The main laboratory which extends up thirty-five feet into the monitor is approximately eighty-five feet long by twenty-five feet wide and is surrounded on the first floor by various smaller laboratories and on the second by the mezzanine floor. This mezzanine floor is open into the main laboratory at all points except for a portion of the north side, where a storeroom is located. A steel and concrete bridge crosses over the center of the main laboratory from the north to the south.

The interior walls are of concrete brick which not only blend well in appearance with the concrete floors and gray painted steel work but also have superior acoustical properties. The steel girders which constitute the frame work of the building are for the most part left exposed for attaching shafting and equipment. Attached to various H columns are grouped outlets for gas, water, compressed air, steam, and electric power. Large floor drains are provided.

Research Equipment

Three groups of equipment are available for research on paper and wall board. The small scale paper equipment with the exception of the shredding machinery is on the mezzanine floor. For shredding the stalks before cooking for chemical pulp, or beating into mechanical pulp, a small farm feed grinder or shredder of the type used for grinding ear corn and a small Grundler hammer mill are used. The feed grinder is adjustable but produces coarser material than the swing hammer mill. The latter is provided with several screens having different sized rectangular openings so that the fineness of the shredded stalks may be varied. In the swing hammer mill the stalks may be ground either wet or dry while the feed grinder is suitable for dry grinding only. For washing any adhering dirt from the shredded stalks a washer consisting of a screen covered cylinder revolving in a rectangular wooden tank supplied with circulating water is used.

The small scale digester located on the south mezzanine floor is of the stationary type with a capacity of about two cubic feet. The charge is put in through an opening in the top and removed through one in the side. Heating is by steam which enters through brass distributors at the bottom. Pressures up to sixty pounds can be secured and are determined by a gauge connected to the top of the cooker. Suitable valves for blowing off air before starting, for letting off pressure, and for draining of the cook liquor are provided. While this digester operates at lower pressure than commercial wood pulp digesters, the pressure has been found to be ample for the successful pulping of cornstalks and straw.

In addition to this digester, which is used exclusively for paper research, there are available several autoclaves and pressure cookers which are also used. Small gas heated aluminum cookers and a steam jacketed cooker have been used on small batches. Two gas heated autoclaves are used for high pressure cooks. A glass lined digester is being converted over for use as a sulphite digester. This equipment allows small scale cooking under widely varying conditions.

At the left of the paper digester is a sand filter for filtering the water used. The filtered water is distributed through brass pipes. At the right of the cooker is a laboratory beater of about one pound capacity. The tub, rolls, and bed

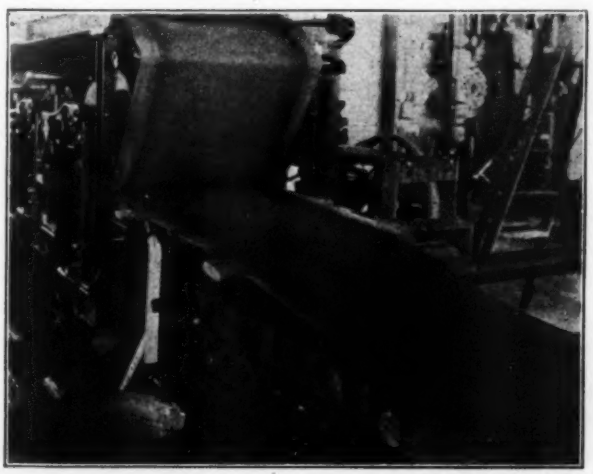
plate are of iron finished with several coats of white lacquer. Next to the beater is a McKim "baby" jordan machine.

Directly above the Jordan is a barrel which serves as a stuff chest. Thorough agitation of stock in the stuff chest is secured by a portable type electric mixer equipped with monel metal shaft and propellers. The pulp is dropped directly from the stuff chest to the Jordan through a gate valve. The Jordan empties thru a brass pipe into a slightly elevated

Oliver pickup roll and Downingtown board forming machine—Chem. Eng. Dept., I. S. C.

wooden tank. This tank is connected directly to another tank from which the stock is pumped by a centrifugal pump to the pulp screen. This arrangement permits the pulp to be run through the Jordan at any desired consistency and then diluted in the second tank before going to the screen.

A slotted brass plate with openings 0.012 inch across is mounted in a box-like cypress frame elevated on legs about four feet from the floor. The movement of pulp and water is downward through the screen and through an opening in the lower part of the screen box into an adjacent compartment from which it escapes through round openings into the riffle at a level slightly above that of the top of the screen plate. The water above the screen is kept in agitation by

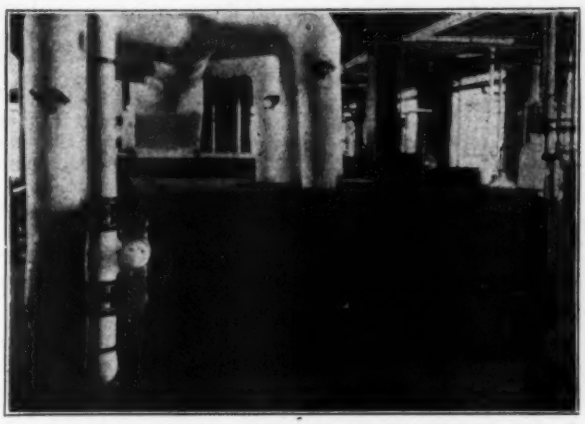


Wall board passing from press rolls to dryer—Chem. Eng. Dept., I. S. C.

a rectangular frame work of slats under the screen plate hinged at one end and vibrated at the other by a crank device operated from the main line shaft. The riffle is merely a flat wooden trough about one foot wide and four inches deep with three baffles, each three inches high. The riffle is inclined so that it has a total fall of six inches onto a dewatering screen set in a metal drain pan provided with a drain to the sewer.

The dewatering screen consists of a rectangular wooden frame 13 inches wide, 36 inches long and two inches deep with the bottom covered with wire paper screen. Three meshes of wire 40, 60 and 80, are available. A large amount of water drains away from the pulp on this screen, leaving it in a more convenient condition to weight and sample for yield determinations. Bleaching is usually done in an eight gallon stoneware jar, the pulp being stirred by an electric mixer of the type used in the stuff chest. For chlorinating pulp according to the Devaines and similar processes a fifteen gallon jar with special wooden cover and an electric stirrer is used.

For forming sheets of paper, three sheet machines are used. One is an Appleton machine forming a sheet six and one half inches square. A machine of similar type of sheet brass, producing sheets seven by nine inches and a larger galvanized iron machine producing sheets twenty inches square are used for both paper and wall board test sheets. Suction for this machine is provided by a steam eductor



Discharge end of dryer—Chem. Eng. Bldg., I. S. C.

connected by suitable valves. The paper is removed from the machine onto a piece of blotting paper or felt and may or may not be pressed before drying. For pressing, a small letter press and a small hydraulic press capable of very high pressures are available. For drying the paper, a small laboratory hot plate dryer is used. Some drying has been done on a large steam heated laundry mangle. Two steam heated shelf dryers are used for drying small sheets of wall boards and to some extent for paper.

Semi-Commercial Unit

A group of larger machines used for wall board and paper production is located in the laboratory at the southeast corner of the first floor. A vertical type of stationary digester with agitator, steam jacket, and direct steam heating connection with a capacity of about 75 cubic feet is provided for cooking corn stalks for wall board or paper pulp. For concentrating waste liquors there is a steam jacketed iron kettle of about 100 gallons capacity. The one hundred pound beater has a wooden tub and iron roll and is equipped with individual motor drive. The 300 gallon wooden tanks are used as stuff chests. For pressing out wall board, papier mache, and various lumber substitutes under high pressure and heat, a special type of hydraulic press with four foot square steam heated platens is used. This is operated by a steam driven pump.

The large semi-commercial wall board equipment is located partly in the main laboratory on the first floor and partly on the south side of the mezzanine floor. Preliminary shredding of the stalks is done in a Badger shredder equipped with several screens for producing shredded stalks of different fineness. The shredded stalks discharge directly into a one ton tub, wooden tub beater driven by a 100 hp. variable speed motor. After being beaten the proper amount, the pulp

is pumped to the Oliver pick-up rolls on the mezzanine floor. In the Oliver machine a hollow screen covered cylinder 28 inches wide and 36 inches in diameter rotates slowly in contact with a suspension of pulp. The interior of the cylinder is divided into several compartments. By means of a patented rotary valve located on the axis of the cylinder, these compartments are, one at a time, subject successively to vacuum, release and air pressure. The portion in contact with the pulp forms a mat on the screen surface under influence of the suction. As the cylinder revolves, the mat is loosened and carried onto the felt of the board forming machine. In this machine the board is pressed between rollers, while carried on the felt, and much of the water removed. The rolls are adjustable so that the amount of pressure can be regulated. From this machine the board goes to the Coe Dryer. Dryer.

In this Coe dryer, the board is carried along on a series of rolls about four inches in diameter. Above the lower set of rolls is another series of the same size, but with sufficient vertical play that they will rise high enough to allow the board to pass underneath as it is carried along by the lower rolls. The weight of the upper rolls tends to prevent any warping. The rolls are driven at a slow speed by a chain drive. Above and below the rolls are steam coils to provide the necessary heat. The rolls except at the entrance and discharge ends are entirely surrounded by insulating material. Heated air is circulated through the dryer by a Sturtevant fan. Temperature and humidity in the dryer can be readily controlled. The dryer is approximately six feet wide and forty feet long. A cutter for cutting the wall board into proper lengths will be installed.

The laboratories of the department are also equipped with much small scale equipment such as is used in paper mills, such as absorption towers, water softeners of both lime soda and zeolite types, and chlorine caustic soda cells. Analytical laboratories are located on the second floor. Equipment for testing strength and insulating value of the board as well as all standard analytical apparatus is located here. Exceptional equipment for testing paper is available in the textile chemistry laboratory of the chemistry department. Here is provided a constant temperature—constant humidity room fitted with such paper testing equipment as Mullen bursting tester, motor driven tensile strength tester, and a folding endurance tester.

West Virginia Pulp & Paper Co. to Expand

The West Virginia Pulp & Paper Co., New York City, has awarded contract to the Morton C. Tuttle Co., engineers and builders of Boston, covering a construction program at its Mechanicsvile, N. Y. mill, which, when completed, will have modernized much of the plant.

The need for the new development is occasioned primarily by the decision to increase production by the installation of a new paper machine, the output of which could not be handled by the already inadequate cutting and finishing departments and storage and shipping facilities.

The largest single unit in the program of expansion, which will total more than half a million dollars, is the construction of a new story over the present finishing and storage buildings. Besides other smaller additions, a covered siding will be constructed on a trestle with a 12-foot shipping platform, which will add 8 cars to present siding capacity.

Construction will start immediately and will be carried on without interrupting production.

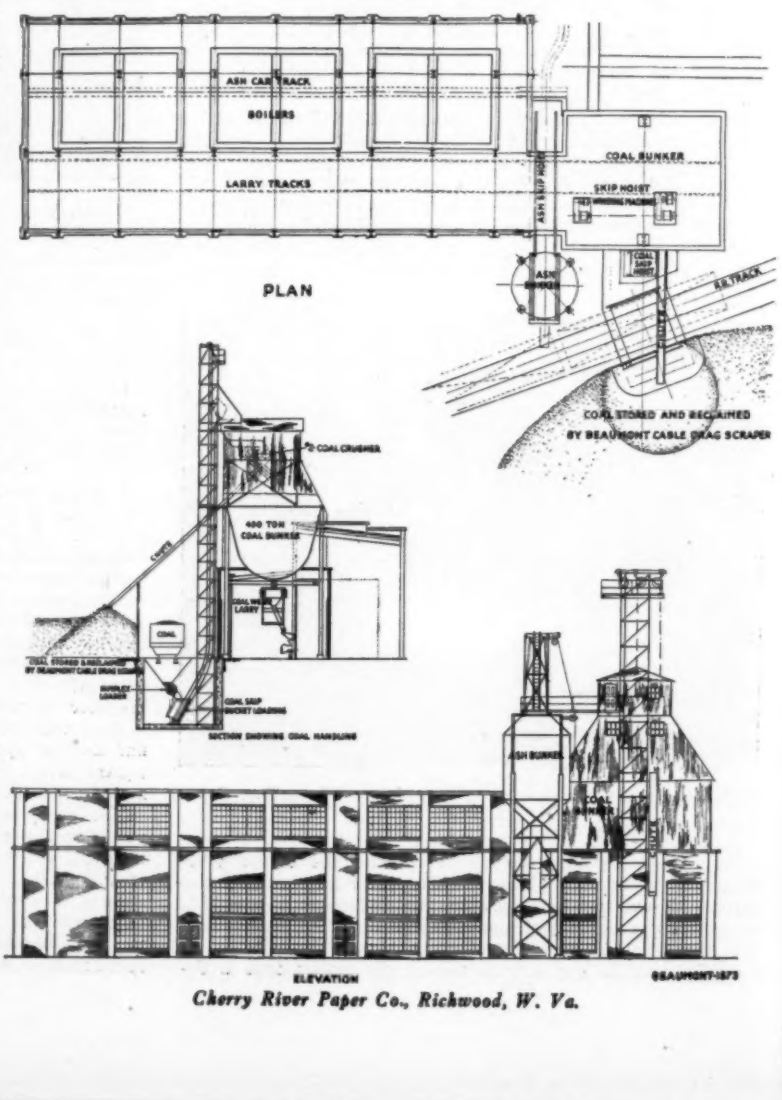
Coal and Ash Handling System at Cherry River Mill

Complete Super-Central System in Operation at Richmond, W. Virginia

EARLY in 1922, the Cherry River Paper Company built a new boiler house at their Richmond, W. Va., plant. On account of the isolated location of the plant, considerable time and thought was spent in the selection of dependable equipment in order to insure against shutdown from the failure of inferior designs or materials. How wisely the coal ash handling system was selected will be seen from the ensuing summary.

Briefly, the coal is hoisted to an external overhead bunker by a fully automatic skip hoist. From the bunker the coal passes through a traveling weigh larry which distributes it over the stoker magazines. The ashes fall into the hopper beneath the stokers and are wheeled in cars to a separate ash skip hoist at the end of the building. This hoist delivers the ashes to an overhead ash bunker mounted over the railroad track.

The company has their own coal mines from which the coal for the plant is obtained. This run of mine coal is brought to the plant over the company's logging railroad in flat bottom cars which necessitates the use of a grab bucket and crane to unload cars. When coal is received in hopper bottom cars it flows by gravity into a 10′ x 12′ steel plate hopper beneath the railroad tracks. From here it

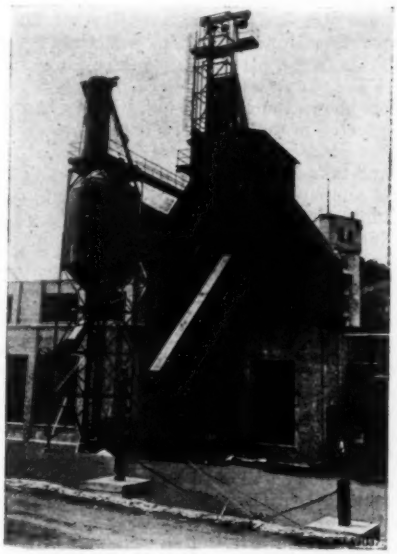


Cherry River Paper Co., Richwood, W. Va.

is fed to an automatic skip hoist by means of a Simplex loader. This device is simply a chute with a hinged loading nose opened and closed by the skip bucket. It automatically loads the skip bucket, thus permitting the skip to work at maximum capacity because there is no delay in loading and because the bucket is filled at each loading.

The entire operation of the coal skip hoist is automatic, the operator presses a starting button and the skip bucket loads with coal, elevates it to the top of the bunker, discharges, lowers and reloads, continuing this cycle without attention until all the coal is hoisted.

The bucket discharges its load over the bunker into a reciprocating feeder which delivers the coal at a uniform rate to a 30″ x 30″ double roll crusher. The 30″ roll is found to be the smallest diameter which will successfully "bite" the lump in the mine run coal. It "grabs" the lumps and be-



Close-up view slow-speed ash skip and bunker; high-speed coal skip and bunker

cause both rolls travel at the same speed, crushes and carries the ribbon of coal through without grinding, thus producing a minimum of fine coal. After crushing, the coal falls by gravity into a 400 ton steel suspension bunker.

Gates in the bottom of the bunker are spaced 6 feet apart so that practically all coal may be drawn from the bunker. These gates are fitted with operating levers which interlock with an operating mechanism on the larry and are opened from the larry only when the larry is under the particular gate to be tapped. This feature eliminates the use of an unsightly collection of operating chains under the bunker and assures that all coal will pass through the larry and no coal can be spilled on the floor.

The coal weigh larry is of the two ton, electric motor driven, cage operated type. Record of the coal weights is kept by the larry operator by means of a ticket recorder on the scale. Individual boiler weights may be kept but the management is interested in the overall plant efficiency so that the individual boiler performance is only checked up occasionally.

Besides weighting the coal, the larry distributes it evenly over the stokers. There is no separation of fine lump coals.

The coal hoisted by the skip may be diverted from the bunker down a chute to storage on the ground. Here it may be stored and reclaimed by means of a cable drag scraper.

The operation of the ash skip hoist is also automatic. The ash man dumps the ashes from his horizontal transfer car direct to the ash skip bucket. He then pushes a button and rides back to the boilers for more ashes. The loaded skip bucket ascends to the top of the ash bunker, discharges, lowers and comes to rest in the pit ready for another load. Should the future growth of the plant warrant it, an automatic loader may be installed at the loading point to increase the capacity of the ash skip hoist.

The ash storage bunker is of the steel cylindrical type having a capacity of 100 tons. Ashes may be delivered to railroad cars or trucks as desired.

From the description given, it may be seen that the following fundamentals governed the type and arrangement of equipment. The coal and ashes being concentrated at the end of the building permitted the use of the most economical type bunkers, square and round. All distributing conveyor equipment is eliminated, thus further reducing initial cost and also reducing operating and maintenance expenses.

The operating expenses are further reduced by the use of large equipment which wears slowly and which may be repaired locally. An expensive stock of special repair parts is not required.

Since all the machinery and structure is outside the boiler house, the cost of installing was less and the repairs may be readily made due to easy accessibility. This also gives a clean, light and pleasing boiler room as there are no overhead bunkers to obstruct the light and ventilation.

Actual operating figures for the coal and ash handling system have been kept ever since the plant started. Below is given the records for the years 1926 and 1927, the fourth and fifth years of operation.

	1926	1927
Tons Coal burned per year	48,464	50,245
Approx. Tons Ash Produced	7,300	7,500
Total Days in Operation	308	310
Labor		
Crane Operator 9 hrs. day @ 44.4c	1230.76	1238.76
Helper 9 hrs. day @ 41.3c	1144.83	1152.27
	2375.59	2391.03
Labor cost per ton Unloading Cars	4.9c	4.76c
Note: The Coal Skip Hoist & Crusher being full-automatic are not burdened with direct operating labor.		
Ash Handling man 7 hrs per day @ 44.4c	957.26	963.48
Labor Cost per ton for handling Ashes	13c	12.85c
Maintenance		
Total Electrical Supplies & Repairs	14.28	28.87
Total Mechanical Supplies & Repairs	42.77	114.81
Labor Inspection, Service & Repair	119.20	144.22
	176.25	287.90
Average Maintenance Cost per ton of Coal & Ash handled	3 mills	5 mills
Power		
Total Power Charge	353.78	366.78
Average Power Cost per ton of Coal & Ash handled	6.3 mills	6.3 mills

Bear in mind that the coal is unloaded from railroad cars by locomotive crane employing an operator and one helper.

We are indebted to Mr. Elmer C. Smith, Ch. Engr. of the Cherry River Paper Company, Richmond, W. Va., for the above information.

Continental Appoints Sales Manager

J. L. Stille, formerly manager of sales of the Chicago branch, has been appointed sales manager of Continental Paper & Bag Mills Corp., which is controlled by the International Paper Co.

The Continental Corp. has two plants in Maine, one in New Hampshire, four in New York, one in Pennsylvania, two in Wisconsin and one in Michigan, as well as two plants in Canada—one at Ottawa and the other at Elsas, making a complete line of wrapping paper, paper bags and tissue papers. At present, the corporation is engaged in an extensive program of improvements at its various mills in line with its policy of keeping its plants thoroughly up-to-date.

Container Corp. Buys Chicago Coated Board Mill

The Container Corporation of America has concluded negotiations for the purchase of the Chicago Coated Board Division of the Robert Gair Company, in Chicago, and took over this mill June 1. The same grades of board will be produced as heretofore.

The Manayunk Division of the Container Corporation serves a large eastern clientele on set-up boxboard, and now with the purchase of the Chicago Coated Board mill, it is in position to serve a large trade of set-up box manufacturers and will make it a point to cater to consumers of set-up and folding boxboard in such a way as to increase its list of customers for these divisions. This purchase gives the Container Corporation a daily output of over 1200 tons in boxboard, container board and strawboard, and makes the company the largest producers of board in the industry.

Nearly thirty years ago four men, then prominent in the manufacture of board, conceived the idea that inasmuch as the majority of the waste paper came from the cities and most of the board was consumed there, the manufacturing of board in the city would be an economic measure, by the saving of freight on the paper stock going out and board coming in. As a result, these four men organized the Chicago Coated Board Company and built the plant only a stone's throw from down-town Chicago. These pioneers were Ben I. Harter, John Shartle, Mort Wiliams and Crawford Fairbanks, all from the state of Indiana. Mr. Harter was manager, Mr. Shartle superintendent. Messrs. Williams and Fairbanks did not come to Chicago. The former was a prominent strawboard man and had the management of strawboard mills in Indiana. Mr. Harter later left this company and went to England where he built a board mill, and F. D. Wilson, now head of the Western Mills of the Robert Gair Company and at that time Mr. Harter's assistant, became manager. Mr. Shartle left this plant to go to Tonawanda, N. Y., and with others built the board mill at that place.

The plant of the Chicago Coated Board mill is located at 404 East North Water Street, Chicago. The location of this property, at the north of the Chicago River, is directly in the path of the improvement of the lake front which has already been proposed and laid out by the Chicago Plan Commission. The accompanying illustration shows in perspective the proposed connection of the outer drive in Grant Park north from the Field Museum over the Illinois Central Railroad tracks to the Chicago River. Here the route turns east and follows the south bank of the river along the proposed extension of Wacker Driver to the river mouth. At this point, the route turns north, crosses the river by means of a bascule bridge and is carried on north over the Ogden Slip, the railroad tracks and intervening private property to a connection with Lake Shore Drive at Ohio Street, where Lake Shore Drive now ends. The bridge and outer drive north of the river will be very similar to the Michigan Avenue improvement. The cross indicates the location of the property of the Chicago Coated Board mill.

New Photographs of Champion Mills Show Plant's Wonderful Growth

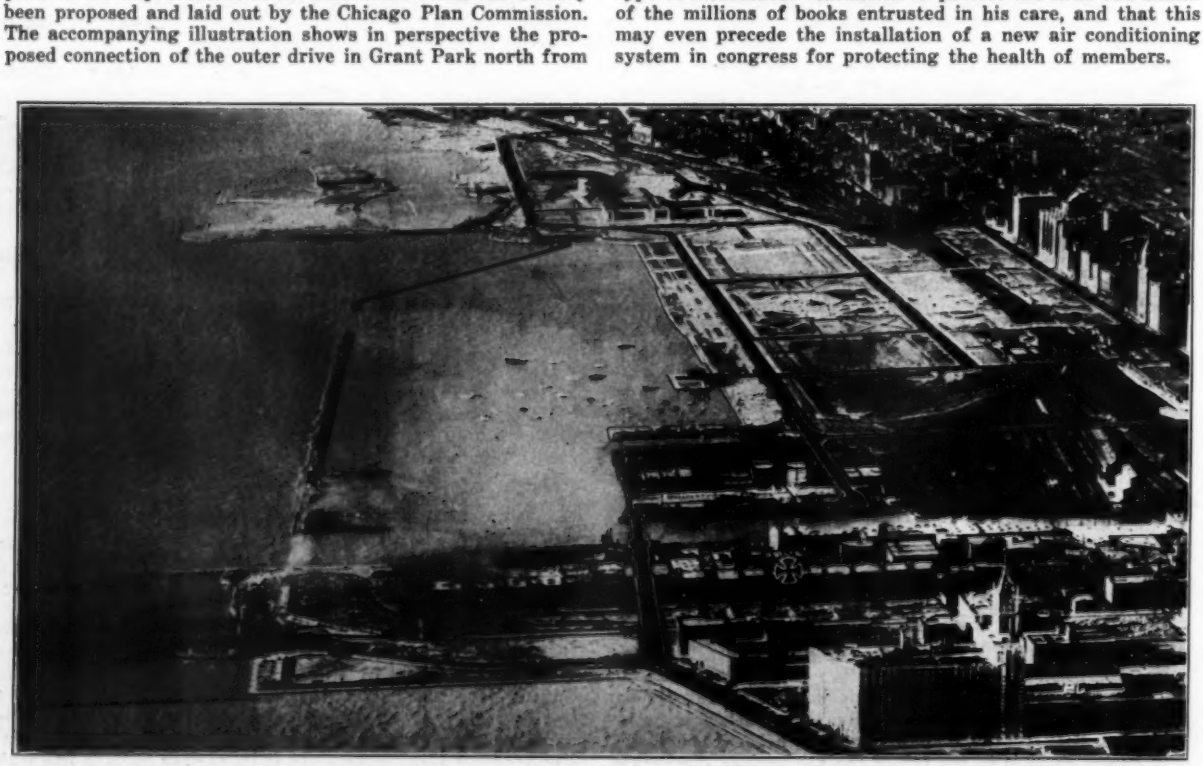
The Paper Industry gratefully acknowledges the receipt of six beautiful photographs, packed in an especially attractive art box, from Peter J. Thomson, president of The Champion Coated Paper Co., Hamilton, Ohio, depicting the origin and growth of this large plant, also a bird's eye view of the Champion Fibre Co., Canton, N. C.

One picture shows the original mill of the Champion Coated Paper Co., erected in the spring of 1894, and its first addition to the left erected in 1896. There is an aerial view of the present plant taken this year which shows the magnificent growth this company has made in its 34 years of existence. Another interesting photograph shows the original office building which was erected in 1893 compared with the new one which was built in 1924.

Books Breathe Air Like Human Beings

Plenty of fresh, clean air and light are imperative to the proper preservation of books in any public library or in the home, according to George Putnam, veteran librarian for congress, who declares that books breathe just like people and must have moisture and air motion to preserve them.

Mr. Putnam announced that a new fourteen stack wing to be connected to the congressional library will have the latest type of mechanical ventilation to protect the lives and health of the millions of books entrusted in his care, and that this may even precede the installation of a new air conditioning system in congress for protecting the health of members.

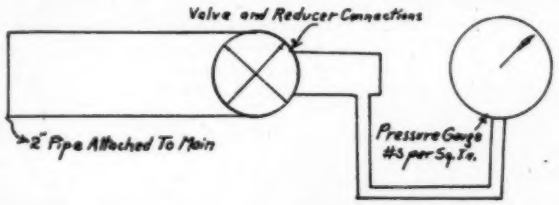


Aerial view of new lake front development in Chicago. Cross marks location of new mill of Container Corporation of America

Practical Helps for the Mill Man

Handy Installation of a Water Pressure Gauge

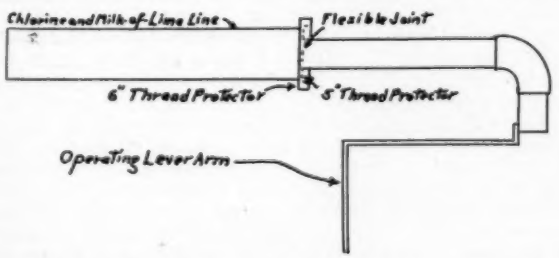
WATER tank for pressure purposes in one mill is located several stories above the main floor. To ascertain the water pressure developed by the water contained in this tank



in the main pressure water supply line located on the main floor, was the desire of the mill operatives. A short length of 2 inch pipe was installed into the 6 inch main at a convenient point on the main floor. To this short section of pipe through a valve and reducer connections was attached an ordinary water pressure gauge. The gauge is located in such a position that it can be easily read by anyone on the working floor, the gauge recording the pressure in pounds per square inch. Naturally, such an installation has proven unusually convenient.

Agitation Arrangement for Bleach Liquor

IN THE design of a bleach liquor preparation plant in which liquid chlorine and milk-of-lime were to be used, it was deemed advisable to make the installation without the customary pump for agitation of the liquor in process of preparation in the mixing tank. The piping arrangement supplying the liquid chlorine and milk-of-lime to the tank was arranged in such a manner that it extended close to one side and nearly to the bottom of the tank. The fittings on the bottom of the discharge end of the pipe were arranged in the form of a flexible elbow which through a lever arm connection on the outside of the tank could be operated or swung around over a considerable radius. By operating the lever arm while the



material is flowing into the tank, a very satisfactory agitation is set up.

The materials used in making up this connection were thread protectors used on 6 inch and 5 inch pipes, both sizes of pipe being used in the line. The main part of the line was 6 inch pipe. On the lower end of this pipe was placed the 6 inch thread protector inside of which had previously been placed the 5 inch thread protector supporting a short section of 5 inch pipe through the opening of the 6 inch thread protector when placed in position. To this short section of pipe was attached the elbow and thus a horizontal discharge into the tank was possible.

By operating the lever arm on the outside of the tank which is pivoted to a vertical operating mechanism made of small diameter pipe and attached at its lower end to a short section of pipe in the discharge end of the elbow, the agitating mechanism is put into operation. The operator of this device has found it satisfactory and it functions with no difficulty.

Device to Protect Tower Lining

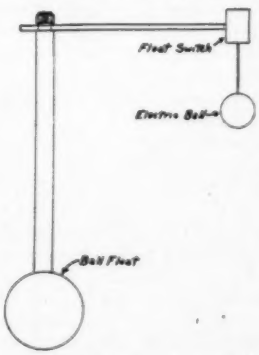
IN FILLING sulphite acid towers with limestone it is common practice to accomplish the filling in the regular daily routine without the use of any guide or guard to protect the lining of the towers from the falling rock.

One sulphite plant, at least, has found it worth their while to design a device which sets into the opening of the tower being filled and causes all stone dropped into the opening to fall vertically downward and thus diminishes the tendency of the stone from dropping immediately against the lining of the tower or bouncing so severely against it later. Naturally, such a guard will aid in increasing the life of a tower lining.

The guard is about five or six feet in length and of a diameter to easily drop through the opening in the top of the tower. It is made up in the form of a hollow cylinder, open at both ends, and with the individual strips of steel comprising the cylinder about 2 inches in width and spaced an inch or more apart. The metal strips comprising the cylinder are bent outward on the upper end to act as a shoulder or support for the guard when placed in position by resting upon the rim of the tower opening. Several rings or hoops of the same material as the staves are employed to support the staves, and are placed conveniently to permit easy forming of the guard. This device has been found of great help in the plant where it was seen in operation and should be of interest to other sulphite operators.

A Water Level Signalling Device

TO ELIMINATE the necessity of constant watching or of leaving work in progress to ascertain the height of water in a tank in process of filling was the thought of an operative in a well-known paper mill. A simple float, float switch, and electric bell were arranged in such a way that when the water reached a certain height within the tank it raised the float, which in turn operated the float switch, and thus through electrical connections caused the bell to ring. With this simple signalling device it is possible for a workman to continue at his tasks until such time as the bell sounds. It is, therefore, possible to save much time and wasted effort in making unnecessary trips to the tank to ascertain whether the tank had been filled sufficiently to permit the pump supplying it to be shut down.



Reducing Distribution Cost Subject Essay Contest

The American Management Association announces $1500 in prizes for the best essays on the subject, "Reducing the Costs of Distribution." These awards have been established by Alvan T. Simonds, president, Simonds Saw & Steel Co., for the purpose of arousing a more general interest in economics and to increase the general understanding of the application of economic principles to business.

The first prize of $1000 will go to a business executive; the second prize of $500 to a college senior, graduate student or junior instructor. Essays should not be less than 3,000 nor more than 8,000 words in length. Papers must be in the hands of the Managing Director of the American Management Association, 20 Vesey Street, New York City, on December

Superintendents Meet at Pittsfield

At Three-Day Session, the Best Attended Since Organization, the National Association Discusses Papers, Amends Constitution and Elects New Officers

THE selection of Pittsfield in the Berkshire Hills of Massachusetts as the meeting place for the ninth annual convention of the American Pulp and Paper Superintendents' Association was an ideal one as proved by results, for in every respect the meeting was the most successful of any yet held. The registered attendance numbered 408 which included many ladies and other visitors. Of actual members, superintendents of mills and men identified in one way or another with the paper industry, there were 168 present who paid the closest attention to the proceedings, even to the last sitting on Saturday forenoon when upwards of fifty took part in discussing a variety of subjects ranging from the Minton Vacuum Dryer, the theory and practice of groundwood manufacture, control of moisture and weight by radio, to rod mill pulping.

In its social features the meeting was highly successful; in fact, it was a subject of debate among many of those in attendance as to whether the educational and business part of the program had not been eclipsed by the many entertainments provided. These included visits to mills and industrial plants in and around Pittsfield, as well as luncheons and banquets that left no idle moment, from early morning till late at night. But notwithstanding the great social success of the meeting, with its many entertainment features, pulp and paper technology was not neglected, as in addition to the prepared papers on machinery and working processes there were divisional meetings for members interested in boards, coarse papers and tissues, book and fine writings, and chemical and mechanical pulps, with discussions on questions submitted by members. These meetings took place on the afternoon of the first day, mill visitations and trips to manufacturing plants being provided for the afternoon, when many of the members were also treated to a demonstration of man-made lightning at the Pittsfield plant of the General Electric Company. The women of the party were entertained with motor sightseeing trips, card parties and dancing.

Near the close of the forenoon sitting on Friday, June 1, an interesting demonstration of vocational training in the mills was given by J. Norman Spawn and R. W. Jenkins. Some fifteen members were asked to come forward to the front row of seats facing a blackboard and form a foremen's training class in order to show how conferences of this kind are conducted. The class or conference was conducted by Mr. Jenkins who is a member of the staff of the Ohio State Department of Vocational Education. The conference method is predicated on the assumption that the foremen know the answers to questions that may be brought out. The main question as written on the blackboard was "What should a beater engineer know and be able to do in order to furnish stock adequately and satisfactorily?" Each superintendent in the group of fifteen was invited to state his ideas of what a beater engineer should know and eight subdivisions of the question were written out, followed by six or more dependent questions. There was a running fire of questions and answers and the "class" was voted very successful.

By an amendment to the Constitution and By-Laws, a special board of trustees was provided to have charge of all funds of the association in excess of $3,000 and the office of treasurer was combined with that of the secretary, thus doing away with a separate treasurer, except that the chairman of the special board of trustees will have charge and disposition of all funds in excess of $3,000. Nelson R. Davis, of Cumberland Mills, Me., was named chairman of the board, with Fred C. Boyce and Fred J. Rooney as associates. An amendment to Sec. 3 of Art. 5 of the constitution provides for the return in January of each year to all divisional secretaries of 10 per cent of all dues collected from them during the year. A new board of officers to serve during 1928-29 was elected as follows:

President—Benjamin T. Larrabee, S. D. Warren Company, Cumberland Mills, Me.

Vice Presidents—James G. Ramsey, Jessup & Moore Paper Company, Wilmington, Del.; Carl Magnus, Standard Paper Manufacturing Company, Richmond, Va.; Tom Harvey, The Gardner & Harvey Company, Middletown, Ohio; Charles N. Mooney, Smith Paper Company, Lee, Mass.; Leonard E. Smith, Nekoosa-Edwards Paper Company, Nekoosa, Wis.

Secretary-Treasurer—Robert L. Eminger, Miamisburg, Ohio.

Executive Committee—The chairman of local divisions.

DETAILS OF THE MEETING

The ninth annual convention of the American Pulp and Paper Mill Superintendents' Association took place in Pittsfield, Mass., on Thursday, Friday and Saturday, May 31, June 1-2, 1928. All general meetings were held in the auditorium of the Masonic Temple, and here the opening sitting was called to order by John J. White, of Holyoke, chairman of the Committee of Arrangements, who made several announcements regarding divisional meetings and then turned the meeting over to President Fred J. Rooney.

Mr. Rooney opened the proceedings by asking the members to rise and pay solemn tribute to the memory of members who had died during the year, after which he introduced the Hon. J. P. Barnes, Mayor of Pittsfield, who made a most cordial welcoming address, in the course of which he tendered the visitors the freedom of the city and gave some interesting historical details of Pittsfield. It was one of the last settlements formed in the west of Massachusetts and was originally called Potoomsic. The city now has a population of 50,000. An invocation by the Rev. Maurice A. Levy, pastor of the First Baptist Church, followed.

James G. Ramsey was called upon for a response to the Mayor's welcoming address and he made an eloquent and forceful speech, paying tribute to the manufacturers of paper and of paper machinery in Pittsfield and surrounding towns whose businesses had grown to large proportions from small beginnings like the national association which had developed to its present position from the efforts of a few devoted men, who knew that they must give in order to receive thus fulfilling the watchword of the association "Share Your Knowledge."

President's Address

President Rooney then submitted the annual address of the president, in which he reviewed the progress of the association and urged upon all members to work for its growth and advancement. The Superintendents' Association was, said he, an organization to increase efficiency in the operation of pulp and paper mills by the discussion of problems arising in their operation. The two chief things most necessary in industry today were efficiency and economy of operation. He quoted from a statement by Charles M. Schwab declaring that "Manufacturers cannot expect to continue to be prosperous in this or any other country unless they study economy and the possibilities of cutting costs to a degree never before considered necessary".

Referring to the work of the eleven divisions of the association, President Rooney said that monthly meetings were held by several of them, these meetings being of great value.

Vocational Training—The subject of vocational education had received attention during the year. J. Norman Spawn as chairman of the Vocational Education Committee was now well on the way toward a workable plan of practical value. With him was associated Harry E. Weston, of THE PAPER INDUSTRY, who is a member of the Superintendents' Association. The American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry had appointed two men each to work with Mr. Spawn and Mr. Weston so as to avoid duplication of effort. President Rooney said it was to be hoped that Mr. Spawn and Mr. Weston would continue to represent the American Pulp and Paper Mill Superintendents' Association in this important work.

Growth of the Association—The growth of membership in the association was touched upon, upwards of forty superintendents having joined it during the year. It was a fact, too, that more members had taken an active part in association work and as a consequence the association had become a most important factor in the industry.

Speaking of divisional meetings he said an effort should be made to hold these monthly. An elaborate program was not necessary, one good subject and the direction of a competent leader being all that was necessary. As to entertainment, a simple dinner, perhaps some music and a local speaker would suffice and entail little expense. He said he had attended five divisional meetings during the year and had observed the interest taken in talks pertaining to the actual work of the superintendents.

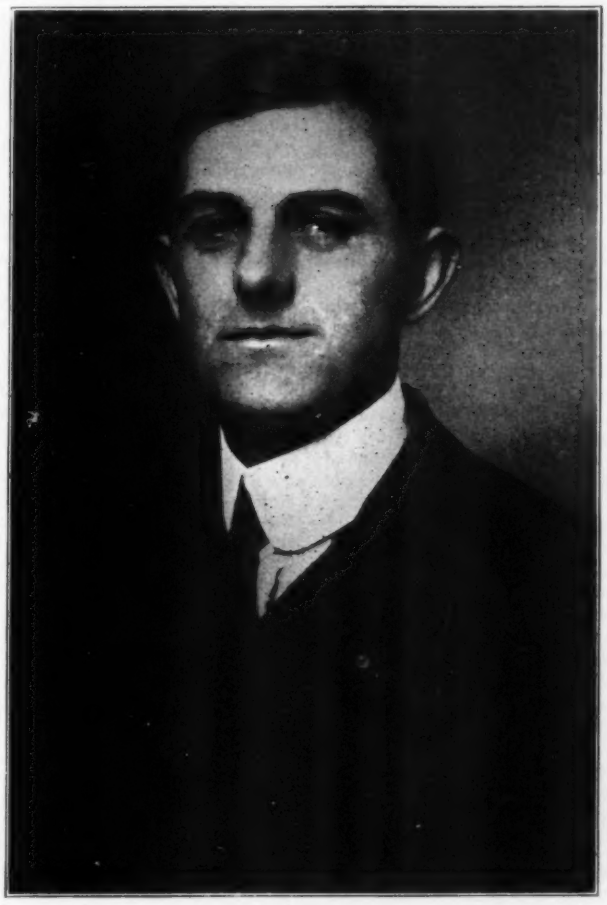
Neglect of Practical Problems—He made a plea for greater use on the part of the members of the Practical Problems Committee which had been created by vote of the convention two years ago. That it could and should be one of value to the members there was no gainsaying, but he regretted to report that owing to lack of use or demand on the committee it had not been of great value.

Co-operation and Assistance—President Rooney expressed the appreciation of the association for hearty co-operation and assistance in its work on the part of President D. Clark Everest of the American Paper and Pulp Association. He also made note of the pleasant and co-operative relations that existed between the Superintendents' Association and T. A. P. P. I.

He commended the work of Robert L. Eminger, national secretary, and hoped he would be continued in the office at an increased salary. Carl Magnus, who arranged the annual meeting at Richmond last year, was commended for the splendid work of himself and his coworkers.

Committees Named—A committee on resolutions, with Fred C. Boyce as chairman and Messrs. Argy and Brautlecht as associates, was then appointed. Following this, K. E. Terry moved the appointment of a nominating committee of five members with President Rooney as chairman, the full committee to consist of Fred J. Rooney, K. E. Terry, Harry E. Weston, Tom Harvey and Fred C. Boyce.

Following this, the regular program of papers and discussions was called for.



BENJAMIN T. LARRABEE

New President of the American Pulp and Paper Mill Superintendents Association. Elected June 1, 1928

Slitter and Winder Troubles and Their Remedies

L. J. List, of Samuel M. Langston Company, described some of the troubles experienced in the operation of slitting and winding machines. Interweaving is one of the common troubles caused by either insufficient or excess tension on unwinding roll or reel; lateral movement in idlers or drums over which the sheet is threaded; insufficient wrap around and controlled by the drums; too long a "draw" from slitting elements to the drums. The foregoing are other troubles.

To overcome tension requires skill and judgment on the operator's part; friction should be properly designed and proportioned to suit the character of stock handled. As to lateral movement in idlers or drums this can be controlled by end thrusts, spacing or clamping collars. Grooves in the drum serve to release air from under the sheet thus enabling it to make a more immediate and intimate contact with the drum.

Winding on cores of uneven diameters leads to telescoping or dishing of rolls through the shifting of paper on the core. A driven rider or pressure roll used on winders insures a good tight start with the first wraps around the shaft or core. Sometimes there is a collapse at the center of the roll. Increasing the tightness with which the roll is wound as the diameter increases invites this trouble. This may be avoided by the use of a pressure-roll type winder.

Mr. List said that a winder depending entirely upon tension on the unwinding roll for tightness or density of the finished roll was a disadvantage especially on small roll work. Wrinkles or welts form on sulphite bond and carbon tissues when great density or tightness is used. It was preferable in instances to use a less tightly wound roll.

The new high speed paper and board machines have given rise to problems of their own in slitting and rewinding. Much of the work that was formerly done in the finshing room is now done at the dry end of the fast machines. Whether News at 1200 ft., Kraft at 900 ft., or Board at 300 ft., the

slitters and winders built to stand the pace a great aid is a drive with unusual flexibility, permitting of a quick get-away and equally quick stop. He instanced as desirable equipment a direct connected motor with dynamic brake and the Waterbury oil gear drive. This gear also acts as brake and provides a complete range of speed from one r. p. m. to maximum.

Dust was mentioned as a serious slitting problem in the cutting of cash register and adding machine rolls, die wiping stock and music paper. The "Shear Cut" principle was considered best as giving rise to the least dust and giving best service. The Samuel M. Langston Company turn out a slitter and winder combining shear cut with surface or drum winding in a form capable of meeting any requirements of the paper or board industry, Mr. List said.

Uses of Lift Trucks in the Paper Industry

Theodore T. Ludlum, of the Steubing-Cowan Company, showed several reels of moving pictures to demonstrate the varied uses for lift trucks in the paper industry and accompanied the views with explanatory talks. He made the announcement that a joint effort was being made by the Steubing-Cowan Company and the Department of Commerce to simplify the practice of material handling by the use of lift trucks.

Drying Systems in the Paper Industry

F. C. Farnsworth's paper entitled "Steam Plant Economics in Paper Mills" was prefaced with a discursive account of ways and means of keeping down expenses and increasing efficiency in the power plants of paper mills. The statement was made that a superintendent who neglected to keep informed on improvements in equipment that would lower the cost of operating machinery was not attending to his business, while one who did watch out for equipment or systems calculated to reduce costs and increase production should receive proper credit. The point made was that out-of-date methods should be abandoned in favor of modern, efficient methods.

Fuel being one of the major items in the operation of the paper mill it was important to effect savings in its use. Some mills reduce fuel cost by the introduction of modern boiler equipment and their power cost by modern engines. However, a mill that effects economies in steam and power consumption to waste them in process work is like a man making a great deal of money and spending it recklessly. Whereas twice as much electric current is now used as formerly, no more coal is being used and this points to an economic generation of both steam and power. This does not apply to all paper mills in respect to steam consumption according to the amount of paper dried. In this department, Mr. Farnsworth said, a little progress has been made as regards a reduction of steam consumption and costs.

The main thing was to close up all avenues of escaping B. t. u.'s. If care is not exercised with the use of such a close system production will suffer. Special systems are accordingly required for keeping the steam moving at high speed through the various drying and heating units and there should be means for extracting air at certain points and for draining water under the various pressures used in and about a plant in various processes. The air must be removed without waste of steam and the water held under pressure to allow no escape of B. t. u.'s. Then the steam must be kept dry by separators as it goes to the prime movers, and oil separated before it goes into the drying or heating unit, oil being a great insulator of heat and capable of reducing drying capacity so as to cause loss in production and high back pressure on engines. Leaks can be determined by adequate metering and cost records.

When increased production is required from a paper machine the drying capacity should be increased by eliminating all water, air and other elements from the inside surface of the dryers. While it is possible to extract more water by increased pressure at the wet end this is not desirable as the quality of paper is adversely affected thereby. Lower back pressure was the thing to strive for. For every pound of lower back pressure half a pound of steam is saved per h.p. per hour.

Farnsworth System Features—Mr. Farnsworth described the efficient drying system developed by his company following an experience of equipping 317 paper machines of various sizes and drying every known kind of paper and pulp. He summarized the features of the system as follows:

"Immediate and continuous removal of water and air to make every square foot of drying surface do maximum work with reduced steam pressure; graduation of temperatures for improving quality, strength, and finish of sheet; uniform temperature and elimination of fluctuating temperatures so that more uniform moisture content will prevail at the reel; elimination of moving parts to reduce maintenance cost and prevent manipulation by inexperienced operators; removal of water all at one point for drainage. Collection of air all at one point for extraction; proper handling and pumping of the condensate that leaves the dryers at temperature of steam, not allowing it to cool down by improper pumping methods; but to hold it under pressure until it is into the boilers; properly metering the condensate continuously with the recording charts on the face of the paper machine, so that the operator can immediately note all changes of steam consumption and correct them if these changes are caused by any change of conditions at the wet end of the paper machine."

He then explained how uniformity of temperatures was made possible by blowing steam from the dryer siphon pipe. After all the air was brought to one point it was easy to extract it. He touched on the influences affecting heat transfer through the shells of the dryers. Heat transfer was more rapid at the first dryer than at the last dryer. He showed how it required a hard blow of steam to remove water of condensation from dryers. Water must be removed immediately from the inside surface of the dryers to develop their greatest efficiency. In the drying system developed by Mr. Farnsworth a way has been found to blow steam through the wet end dryer siphon pipes the same as at the dry end. This is accomplished by using the steam from the wet end dryer bank of siphon pipes to heat No. 1 wet end dryer, which again reduces the temperature at No. 1 dryer where the paper again enters the machine. A positive and uniform gradation of temperatures between sections is made possible by means of water seals, which at the same time bring all water to one point for extraction.

When removed from the dryers at high speed the water carries steam with it and both are at the same temperature. It is kept at this temperature by being held under pressure until fed into the boiler. Mr. Farnsworth said it was only possible to pump such high temperature water by special methods, such as allowing the condensate to flow into a tank that is equalized with the paper machine, so that the condensate can be held under pressure. Then as the tank has filled the water is pumped by applying h.p. steam to blow it out of the tank to another tank located above the boilers with no vent and also held under pressure. From this tank it goes to the boilers by the simple method of automatically equalizing boiler pressure with the tank so that the water flows down into the boilers with the least power or use of steam. That is 75 per cent less steam than is required by a boiler feed pump of any type.

Paper for Envelopes

After a brief but interesting discussion, James J. Shea, of the United States Envelope Company was invited to present his paper on "Experiences of an Envelope Maker with Paper". He described the operations required to turn out an envelope. From 250 to 500 sheets are placed on a cutting board and cut with a die for the particular envelope desired. In the Machine Folding Department, the cut blanks are picked up one at a time from a pile of blanks by means of a gummed picker which deposits gum on the front and back flaps. The blank is carried under a plunger the size of the folded envelope. The plunger pushes the blank into a creaser box which creases it to the size of the plunger. The downward stroke of the plunger carries the blank along and deposits it on a hinged block. Folders are located on the block for folding the envelope flaps,

first the side flaps, then the back flap and finally the front flap. The block then opens and allows the folded envelope to drop into a dryer chain from whence it is carried to a receptacle where the envelopes are counted in sets of twenty-five, boxed and shipped.

The Moisture Problem—The greatest trouble experienced by the envelope manufacturer is the moisture content of the sheet. The paper manufacturer should see to it that the sheet is shipped from the mill with the proper moisture content, while the envelope manufacturer must maintain this moisture until the paper is folded into envelopes. The average moisture content of a sheet as it leaves the mill should be 7 per cent. Ways and means must be provided by the envelope manufacturer to keep this moisture in the stock after it is stored, for once out it is impossible to put the moisture back into the sheet by humidification or any other means. The paper manufacturer is beginning to realize the seriousness of this matter and there has been some improvement of late.

Sizing Envelope Paper—Envelope manufacturers experience difficulty in getting a sheet that is sized sufficiently to give it snap and life and at the same time allow the gum to penetrate. A sheet too highly sized has a tendency to "pebble" on the seal and the gum will not lie evenly. A long fibered stock is desirable for envelope paper. Short fibers cause the paper to crack when folded against the grain.

Desirable Properties of Envelope Paper—Summing up the desirable qualities of a paper suitable for envelopes, Mr. Shea said that the paper must contain sufficient moisture; be sized properly; have long fibers; dried evenly and not too quickly on the paper machine, and should be of even thickness throughout.

In closing, Mr. Shea complimented the association on taking a forward step by arranging close contacts between themselves and the men who use their products. Such contacts must result in good to all concerned and insure a better product and lighten the burdens of both envelope and paper men.

Discussion—An interesting discussion ensued concerning humidity conditions and the amount of moisture that certain special papers like glassine should contain. The answer was that glassine required less moisture than other types of paper, say 3 to 5 per cent. Moisture in glassine was not so much of a problem as static electricity was.

Asked as to which side of the paper the gum was put on, it was stated to be always on the wire side because that goes to the inside of the envelope, the felt side forming the exterior.

The softer the paper and less sizing used, the better were the results, Mr. Shea said, in reply to a question by Mr. Ramsey.

Improved Shaking Device for Fourdriniers

An account of an improved shaking apparatus for fourdrinier machines was given by C. E. Macklem, a representative of Beloit Iron Works, Beloit, Wis., to remove any suspicion that the paper which he was to read was an advertising scheme, Mr. Macklem said that the Beloit Fourdrinier is obtainable from any machine builder.

Mr. Macklem mentioned the invention of a new shake by Mr. Aldrich, president of the Beloit Iron Works. This shake was intended to meet the requirements of high speed fourdrinier machines. At the time the old fashioned type of fourdrinier was used, the shaking device was arranged to give 200 to 250 shakes a minute. This worked out well on slow speed machines, but a machine running 500 feet a minute would give only one shake in two feet of paper and with a machine running 1,000 feet a minute, one shake in four feet of paper. The logical thing to do was to speed up the shake but this was found to be impossible owing to the great weight of the shaking parts. A change had to be made in the design of the fourdrinier parts and the improved high-speed shake is linked up with an improved fourdrinier part throughout. The first great change was the construction of a removable type of fourdrinier. This was first designed to save three or four hours of production when changing wires and it opened up a new type of fourdrinier construction. The next great problem was to improve the shake with a device capable of giving continuous service with a minimum amount of attention, care and upkeep. The fourdrinier part had to be specially designed so as to give as light a shaking part as possible, while maintaining the necessary stiffness and strength. A further object was to make a shaking unit in which speed and throw could be easily adjusted while the machine was running and which would allow the fourdrinier part to be lowered or raised at the same time. The results achieved exceeded the expectation of the builder.

Mr. Macklem said that there have been built on order about seventy removable fourdriniers, and all of these excepting newsprint machines are equipped with the Aldrich high-speed shake. Twenty-seven of these machines were built under Beloit patents by other builders.

He gave a detailed account of the construction of the new shake and the arrangement of the table rolls, which instead of being made of brass tubes are made of aluminum tubes weighing less than a third of the brass. Stainless steel is used in the construction of the fourdrinier part and this also affects a saving in weight. The saving in weight, accomplished both by substitution of lighter material and improved design, enables the Beloit Iron Works to build 200 in. and 247 in. wide machines for book, kraft, and bond paper, giving them a quick, sharp, lively shake of 400 strokes a minute, thus making them capable of higher speeds, at the same time turning out a better sheet than with the old time narrow machines. A saving in wire life is also effected, as by lightening out the various rolls on the fourdrinier part, the load to be pulled by the wire is reduced.

The construction of the removable fourdrinier provides that all the parts such as table rolls, breast rolls, wire rolls, shower pipes, savealls, and suction boxes are combined in a unit and are rolled to the front of the machine by means of a small motor geared into the wheels, instead of all parts being removed, then replaced, one by one.

Mr. Macklem said that a few years ago the shake was about to be discarded on many papers; now it is again highly regarded on all papers except newsprint. The importance attached to formation and finish by the paper buyers has brought the shake back into favor. The new type of shake makes it possible to operate fourdrinier machines at twice the speeds and twice the width formerly employed.

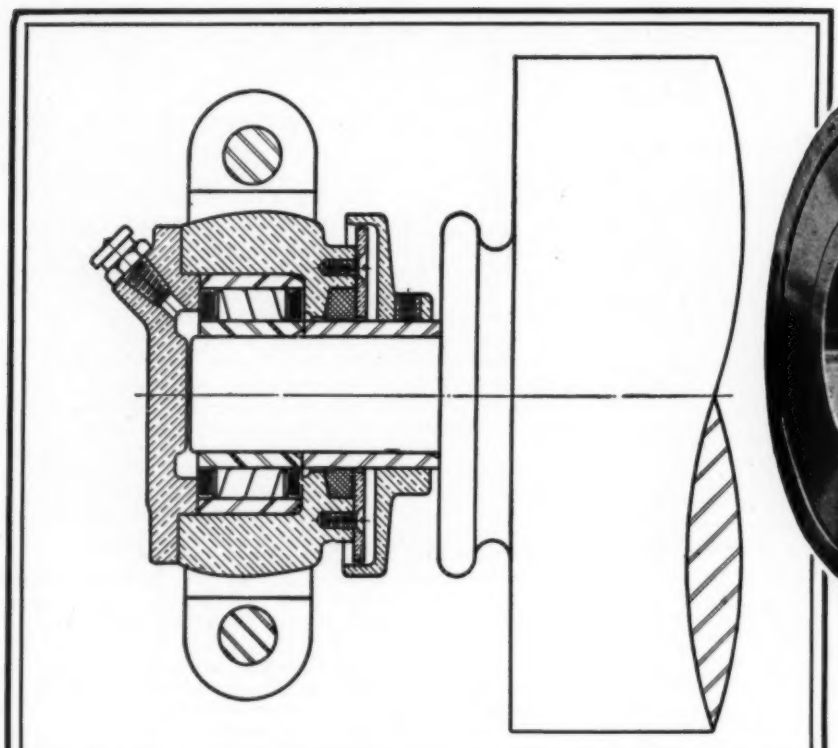
DIVISION MEETINGS

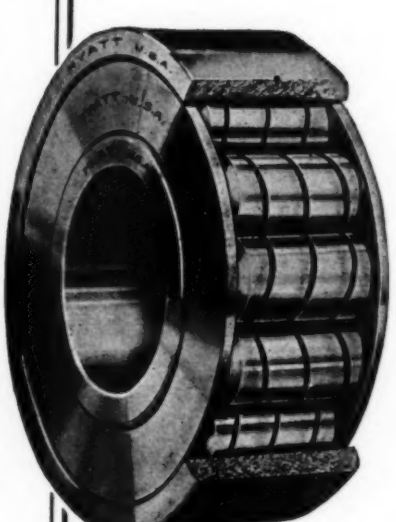
Continuous Pulp Grinding

The chemical and mechanical pulp division held a meeting in the Masonic Temple under the chairmanship of Victor E. Fishburne on Thursday afternoon, at which William J. Argy presented a paper on "Continuous Pulp Grinding." He began by narrating a conversation which he had had with J. J. Warren in 1918 while employed by the St. Regis Paper Company at Black River, N. Y. He had asked Mr. Warren's opinion of the Voith hydraulic magazine grinders in operation at the mill of the Cliff Paper Company, Niagara Falls, N. Y. Mr. Warren's answer was that they were very good, "but I believe a grinder may be successfully built with continuous pressure on the stone, electrically driven and pressure maintained by means of a variable speed motor." He added that he was experimenting with a grinder of this design at the Deferiet plant.

Mr. Argy soon had the pleasure of assisting Mr. Warren and the engineers of the Deferiet plant in working out the original continuous grinder to a practical success, and he said that today there were constructed and operating in different mills upwards of 390 continuous feed magazine grinders.

Economies of Operation—It was stated that a saving of more than 10 horsepower per ton is obtained with the continuous grinder as compared with the ordinary pocket grinder on a pulp of equal fineness. Labor costs are lower with magazine grinders, from the cutting of the tree clear through to the finished pulp. He gave it as his opinion that the narrow, high magazine—that is, one thirty inches in width, twenty-five feet in height, a maximum stone speed of 3,500 feet, with an application of about 1,100 horsepower, one grinder to a motor, with individual control and a production of eighteen to twenty tons of good newsprint, hanging, or manila pulps





A Fourdrinier wire tension roll Hyatt application is illustrated opposite

Every Hyattized roll ROLLS

JUST as Hyatt Roller Bearings give unwavering satisfaction in breast rolls, so too are these better bearings operating successfully on table and wire rolls.

Inspect your table rolls now equipped with ordinary bearings. Some of them are turning, others are dragging. Screens do not last long under these conditions.

And your wire rolls, are they turning as they should, or are they sticking, and adding more strain to the wire.

At the International Paper & Pulp Mill, Three Rivers, Quebec, as well as in other plants, Hyatt Roller Bearings are steadily contributing to the efficiency and economy of table and wire roll operation.

Existing plain bearing equipment can be readily changed over to Hyatt. The added screen life and lowered maintenance soon pays for the cost of their installation.

Hyatt engineers will gladly furnish details.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

was the best installation as to control, low repair and low stone cost, where natural stones are used.

Earlier in the paper, Mr. Argy spoke of the disadvantages of the ordinary pocket grinders through time lost in charging pockets, the number of pockets bound, and slow pockets from poor packing, as well as consequent change of pulp consistence and how much depended on the personal equation, with no efficient means of checking the operator. Checks can be made with the continuous grinder and the loss is stopped. This is effected by the use of graphic charts on the stone motor and pressure motor, by means of a recording temperature thermometer in the pulp pit and an automatic freeness tester. The foreman or operator in charge of the magazine grinders who can make his men realize the value of the recording charts and freeness tester will have the greatest success.

Care of Stones—Mr. Argy mentioned several points in the hanging and installing of new magazine grinder stones that should be considered. New stones should be bought two years ahead and stored in the mill yard, open to the weather in summer but carefully covered in winter and well off the ground. When installed they should be run idle in hot water, starting at about 90° and working them up to a running temperature not to exceed 170° to 180° over a period of thirty-six hours. The stone should be kept as near running temperature as possible at all times, running or idle, unless shut down for a long period of several days, when it should be warmed up again like a new stone. Magazine grinder stones should never be left standing for any length of time in pulp or water.

To occupy the time while waiting for Levi A. Fralick to present a paper on mechanical pulp grinding, discussion was invited on the use of chromium alloys, or Alleghany metal in the piping of SO_2 gases. It was the consensus of those present that such alloys lasted longer than bronze piping and there was a distinct field in the valve line for alloys of the kind made by the Alleghany Steel Company, Pittsburgh.

There being no other business to come before the division the sitting was adjourned. A divisional meeting of members connected with board, coarse paper, and tissue mills was going on simultaneously at a room in hotel headquarters presided over by John P. Kennedy, of the American Writing Paper Company and another divisional meeting of the book and fine writing mills was held under the chairmanship of Theodore M. Pomeroy in the Crane Community House at Dalton.

Book and Fine Writings Meeting

Visits to the Byron Weston and Pioneer Mills of the Crane Company at Dalton were the features of the Book and Fine Writings meeting on Thursday afternoon. These were preceeded by a short meeting in the Crane Community house presided over by Theodore M. Pomeroy. Mr. Pomeroy emphasized the necessity of a brief meeting if the proper time was to be given to mills. He introduced Andrew T. Barnett, who presented a paper on elementary principles of fine paper manufacture.

Mr. Barnett outlined in about three minutes the essentials of fine paper manufacture, including clean water, suitable stock, adequate preparation of stock and trained operatives. Mr. Barnett went into few details as the time allowed was too short.

There was brief discussion of two points of interest to papermakers present. Slime and its prevention was one question. The product of the Gustafson Chemical Manufacturing Co. was recommended by users. There were words of caution as to the use of the chemical when no similar previous effort had been made to clean slime from pipes and chests. It was pointed out that this first cleaning up might take some little time, but that after the accumulation was disposed of, the results were excellent. Users said that old paint might be removed along with the slime, but that no deleterious effect on the pipes had been noted.

One papermaker wanted to know if those present had anything to say about the possibility of substituting domestic clays for English china clays. There were no votes for the domestic clays for coating, but a group supported the use in some instances of domestic clays for filler. Pearl filler was also recommended on certain grades. The question of grit was brought up. However, Stafford said that on a machine where he was using a good deal of domestic clay filler, he had used only five (5) wires, 75 mesh, in fourteen months.

There being no further discussion, the meeting broke up into two groups, and one group went through the Pioneer mill and the other through the Byron Weston mill of the Crane Company. Guides were furnished in each mill and all departments were visited under their leadership.

Transportation to and from the mills and to Pittsfield was furnished through the courtesy of the Crane Company.

THURSDAY EVENING'S BANQUET

The Committee of Arrangements, headed by John J. White, of Holyoke, Mass., assisted by his son John J., Jr., came in for much and well deserved praise for the excellence of the entertainment provided each evening. After hours of close attention to the reading and discussion of papers during the business sittings, or in visiting the paper mills and industrial plants in and about Pittsfield, it was pleasant when members and visitors came together in the evening to find relaxation and entertainment provided in abundant measure. There was a banquet on the program for each day of meeting, excepting Saturday, when the festivities closed with a luncheon at which E. D. Jones & Sons Company were the hosts.

On Thursday evening the men and women of the party met in a joint banquet which taxed the capacity of the large ballroom of the Wendell Hotel and made it necessary to accommodate an overflow of guests in the dining room. After the repast had been disposed of, the room was cleared of tables, and chairs were placed to accommodate the entire party who were regaled until midnight with speechmaking, music and dancing. A graceful compliment was paid to the association by Gibbs-Brower Company, Inc., of New York, who provided bouquets of brilliant red carnations at every table.

The Value of Association Meetings

President Rooney greeted the assembly with a neat speech in which he spoke of the part which the papermakers of Western Massachusetts had taken in the development of the industry, saying that most of the papermakers of any consequence in America had got their start in the Berkshires, as well as some of not so much consequence, as he modestly expressed it, for it had been his own privilege to first see the light in Dalton. The American Pulp and Paper Mill Superintendents' Association was an organization that had been formed for the purpose of advancing the general knowledge of papermaking. There were no longer any secrets in paper manufacture and he spoke of the advantages of men coming together for the discussion of common problems and getting to know each other better, for you have to meet a man socially to understand him fully. He put everybody in good humor with the story of a reckless motor car driver whose identity with one of the prominent men in attendance was but partly concealed and then turned over the conduct of the after dinner entertainment to John J. White who acted as toastmaster. Mr. White is always perfectly at home as a toastmaster and started in by telling a story that set everybody laughing.

Welcomed by W. M. Crane

In introducing the first speaker, Winthrop Murray Crane, Jr., he spoke of him as "the splendid son of a splendid father," in allusion to the late lamented Senator W. M. Crane.

Mr. Crane said he spoke for the paper manufacturers of Berkshire County in extending a cordial welcome to the visitors and hoped that all would be able to visit the mills of the region which had been thrown open for inspection. Touching on the advantages of trade meetings he made mention of the great work that had been accomplished by the Writing Paper Manufacturers' Association, the oldest trade organization in the country. It was always helpful for visitors from other mills to observe the appliances and processes used in different plants and the visitors would be benefited by comparing notes.

Introducing Miss White

Toastmaster White's little daughter was seated alongside of him at the head table, and, before introducing the next

for PAPER

KALBFLEISCH gives coverage for Chemical Needs

Modern paper manufacture is conducted along lines which eliminate waste of time and effort. Sources of chemical supply must be equally competent.

Kalbfleisch qualifies in every particular.... including the very important feature of strategic plant locations. The six Kalbfleisch plants are close to raw material sources . . . close to every paper making center . . . close to you . . . as reference to the map reveals.

This well planned grouping of plants gives extra vitality and meaning to the Kalbfleisch conception of service.

Kalbfleisch Chemicals Include— ALUM (*both Commercial and Iron Free*) CASEIN (*Domestic and Imported*) ROSIN SIZE SALT CAKE CHINA CLAY GLAUBER'S SALT SODA ASH SULPHATE OF SODA MURIATIC ACID SATIN WHITE SULPHURIC ACID AMMONIA NITRIC ACID

Plants:
ERIE, PA.
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speaker, he pointed to her, asked her to rise and said that if anybody present was in doubt as to who was the boss in his home it would now be dispelled. A demure little maiden with long black hair curling over her shoulders stood up and faced the audience to be greeted with cheers. Mr. White said that it was his daughter who was responsible for securing the presence of John B. Kennedy, associate editor of **Collier's Weekly**, as the principal speaker. Mr. White told how interested a listener she was to the Collier-hour Sunday night radio talks of Mr. Kennedy, otherwise known as "Emperor of America." She gave her father no peace until she had his promise to meet the man who spoke so eloquently over the radio, and he was sure that everybody in the audience would be delighted to hear Mr. Kennedy.

Components of Personality

Mr. Kennedy spoke of the development of personality through culture and his message was delivered impressively through illustrations from his own experience as a war correspondent and newspaper man. He made a special plea for the cultivation of a love of poetry because, as he declared, "the simple key to culture is poetry." In this new conception of the meaning of culture which he endeavored to impress on his audience, he defined personality as "the thing we call soul." The stream of personality or character based on culture was common to all, he said, but culture may be either crude or refined. Courtesy was a quality of culture, which was in turn the essence of character. Kindness and courage are the other members of the triad that make up character. He instanced an act of Gene Tunney, heavyweight champion of the world, as displaying courtesy and told how Harry Houdini, the late magician was a man of character through kindness. There was nothing more to personality than natural courtesy, natural kindness, and natural courage. These three things represented to him the larger part of personality. As an instance of courage appearing as a component of character he cited the case of a bearded French private soldier in Morocco who was decorated on the field for conspicuous bravery.

President Eliot's Last Message—The late Dr. Charles W. Eliot, president emeritus of Harvard University, was considered the most cultured man in America. This great educator, the accepted oracle of culture, was interviewed by Mr. Kennedy shortly before he died and asked to leave a final word for the young people of the nation. Doctor Eliot's last message to the young men of America was:

"If all you can think of is yourself you are in a bad way."

This, Mr. Kennedy declared, is the final requirement of character and of culture. The prescription was exceedingly simple and went back to that holy selfishness called religion.

Read More Poetry—Making a plea for wider reading of poetry he quoted from the little volume of verse by A. E. Housman, entitled **A Shropshire Lad**. These verses were, he said, the finest Georgics in any language, but after quoting from the lines describing the execution of a young man (ix, p. 14) as one of the jewels of our tongue, a gem of beautiful literary composition, he asked his hearers to contrast it with the work of Joyce Kilmer, "a true poet of culture", and recited Kilmer's poem on **Suicide**, the lesson to be deduced from which was that "the grace of hope is not a virtue until all things are hopeless".

Recurring to his main theme he spoke for self improvement through good reading and especially the reading of poetry. As to personality there was no trick in the thing so called, all great personalities being marked by great simplicity, as in the case of Hilaire Belloc who wrote that "there was nothing worth the winning save laughter and the love of friends."

A Visitor from Italy

Other speakers at the banquet were Ing. Prof. Moriondi Comm. Carlo, representative of the Italian government and E. A. Wagner, of the General Electric Company.

Professor Moriondi spoke in somewhat halting English but made himself understood perfectly when he said he was here officially for the Italian government to make a study of currency paper. He said he deemed it a high honor and privilege to appear as the guest of the American Pulp and Paper Mill Superintendents' Association and address the convention. He said he was familiar with the excellent work of the association through references to it in the literature of papermaking.

Man-Made Lightning

Mr. Wagner called attention to the exhibit of man-made lightning which was to be given on the following day at the Pittsfield plant of the General Electric Company. He spoke of the close connection between the electrical industry and the paper industry and asked if it was realized that without paper they could have no insulating material.

Following these addresses, a varied program of entertainment was provided. There were selections by the Philharmonic Quartette of Springfield, Classical and popular songs by Miss Pearl Young, and singing-humour-character impersonations by Peter Murray.

PAPERS DISCUSSED ON FRIDAY

The first paper presented on Friday morning when the meeting was opened at 10 o'clock dealt with "The Printers' Problems with Paper", the author being Otto W. Fuhrmann, typographic and production counsellor, Blanchard Press, Inc., New York. This was so excellent a paper that President Rooney deplored the fact that he had no gold medal to award for it.

Papermakers Wrongly Blamed

Mr. Fuhrmann gave a scholarly account of developments in the history of printing and engraving and in treating of modern conditions he admitted that many of the troubles encountered by printers for which the papermaker was blamed were really caused by atmospheric conditions. Although it was generally known that paper is fibrous and easily affected by humidity, and that humidity and temperature varied considerably, printers had done nothing to control these variable factors in printing plants. Instead of that, blame has been laid on paper, ink, rollers, speed and everything but the printers themselves. It was a wonder that so much good printing was being done, considering the conditions that prevailed in many printing establishments. Mr. Fuhrmann said:

"There is no other industry of the size of the printing industry that is so lacking in technology, in knowledge of facts, analysis of conditions and research."

It was formerly believed that papermakers were the only craftsmen who neglected scientific principles, but according to Mr. Fuhrmann the printer is today the standing example of such neglect. It was his belief that the majority of complaints about paper would be eliminated as soon as printers substituted scientific facts for guesswork or time-honored notions. He said that a beginning has been made by the Lithographic Technical Foundation and by the Bureau of Standards. Some problems of the printer were pointed out. A more opaque paper was needed for some work. Many a good printing job had been spoiled because a heavy line of type or a cut would show through on the other side, so, if a way could be found to make machine-finish paper more opaque without impairing its other qualities, printers would be able to execute many jobs in the simplest way without resorting to offset processes. The difference between the felt and the wire side of the paper makes difficulties. Even in plain-type printing on laid paper, where a sharp impression is needed, the comparative smoothness of the wire side makes it hard for the pressman to keep an even color throughout the job.

Indicate the Grain of Paper—Mr. Fuhrmann suggested that papermakers indicate by some device the grain of the paper. The matter of grain was one of the unsolved problems. Printers want the grain to run parallel with the press cylinders, the long way of the sheet. If irregular matting of the fibers could be obtained in a process of making the paper many problems of register and folding that now confront the printer would disappear.

Discussion by Members—In discussing the paper, Tom Harvey said it was one of great value to every man in the room and if the superintendents showed it to the mill managers they would get their expenses paid. He proposed a hearty vote of thanks to the author. He asked Mr. Fuhrmann concerning the variation in thickness of paper allowed for a solid

This *Fast Circulating* Beater Covers *Short Run* Problems

Here is a beater that was originally designed with the object of cutting beating time. And it does,—tremendously!

But in actual use it has demonstrated a new function, one of highest economic importance wherever short runs are a problem.

Its increased capacity and speed and reduced furnish and dumping time more than compensate for the time and labor losses in changing over. Short runs become profitable.

New, novel principles in design are utilized that provide complete hydrating and more frequent circulation of stock of unusually high density. Dead spots and stagnant accumulations of pulp are eliminated. Color mixes readily.

Beater roll harness is of a new type that always returns the roll to its exact position on the bed plate. Excessive wear on bars and bed plate is overcome and stock treatment is unfailingly uniform.

Your present beaters can be converted to this efficient fast circulating type,—to your advantage in cost reduction and production increase. *Let our engineers help you modernize your beating room. Write for full details.*

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color job and was told that a variation of five one-thousandths was permissible for a solid color job and three one-thousandths for a non-solid color job.

Mr. Fuhrmann answered a number of questions concerning the proper treatment of paper to get good printing results. The ideal system was to install devices for the regulation of temperature and humidity. Humidity bears a certain relation to temperature and to attempt to control temperature without at the same time regulating the humidity was a wasted effort. He said there was not a single plant in New York City equipped with a humidifying device.

Objects to Coated Paper—The only paper suitable for good half-tone printing was a coated paper and such a paper was not favored by printers. He hoped it would be possible some day for papermakers and printers to get together and produce a non-coated paper that would take half-tones and do away "with this darn coated paper".

Mr. Fuhrmann was rewarded by a rising vote of thanks and the chair said he would ask him to take the gold medal as received.

Predrying of Paper

Michael J. Argy, of the Argy Preheating Corporation, Niagara Falls, N. Y., who is perhaps best known to papermakers throughout the country as the superintendent of the Cliff Paper Company, was asked to give particulars of a new method of drying paper which involved heating the paper before pressing. He spoke of having inspected a system in use at the Wheelwright mills in Leominster, Mass., by which the paper was subjected to a preliminary drying on bristol boards. A nest of two dryers was used on one machine and of three dryers on the other, the dryers being set between the second and third presses. Good results were obtained by this arrangement. The paper went to the regular dryers containing less moisture and there was a diminished use of steam.

Argy's Invention Patented—Experiments were conducted on two newsprint machines at the Cliff Paper Company mill, but lack of room and excessive cost prevented a complete installation at that time. However, experimentation was continued and a method of reversing the baby dryer and bringing the paper around that dryer before it entered the last press was tried with remarkably good results. The steam pressure on the dryers dropped back from 40 lb. to 30 lb. Hanging paper of 10 oz. weight was being made at a speed of 375 ft. per minute. By the new device it was possible to speed up the machine to 425 ft. before bringing the pressure back to 40 lb., thereby increasing production a little more than 13 per cent. By the old method the machine was making 2,046 lb. an hour and with the new method this was increased to 2,321 lb.

Mr. Argy said that the new predryer system had been patented and the Pedersen patents in use at the Wheelwright mills had been acquired by purchase. He added "we are now covered on any method that may be used in heating the paper before pressing and have formed a company to exploit the same."

From a series of tests reported by Mr. Argy it was worked out that a mill making forty tons of paper with the old method could increase its production four tons a day. Heating the sheet before it went under the press rolls was said to have the effect of a smoothing press. Being compressed in a warm state the paper gained strength and increased folding resistance.

Question of Validity—In discussing the paper, Tom Harvey asked how a patent could be obtained on a system that was old practice in Europe. Mr. Pedersen, a Swede, was the original inventor and had disposed of his rights to some extent in Europe. One of two mills in this country were using the process and paying Mr. Pedersen a royalty, though some who are using it were not paying him anything.

Mr. Argy replied that much of what Mr. Harvey said might be true, but he would not undertake to discuss legal points of this kind. On technical points he was ready to answer any questions.

Stainless Steels

Dr. John A. Mathews, vice president of the Crucible Steel Company of America followed with a remarkably interesting paper on "The Use of Corrosion-Resisting Steels in the Paper Industry". Like papermaking, the history of steel and iron manufacture dates from remote antiquity, prior to our era, both industries having had their origin most probably in China. One of the early experimenters with alloy steel was Michael Faraday, somewhat over 100 years ago, his object being to produce a steel resistant to corrosion and tarnish, for the manufacture of metallic mirrors and reflectors. Faraday did not succeed in accomplishing his purpose, but almost exactly 100 years after Doctor Mathews supplied Mt. Wilson Observatory an alloy steel disk ground flat to one five-hundred-thousandths of an inch of perfect flatness, and which, after three years of use, was still reflecting as much light as ever.

Dr. Mathews prefers to use the term "corrosion resistant" instead of "stainless steel", or "non-corrosive steel" as being more accurate.

Origin of Stainless Steel—The production of so called stainless steel and stainless iron was the result of investigations of Harry Brearley in Sheffield and the late Elwood Haines of Kokomo, Ind. They are covered by patents owned by the American Stainless Steel Company. Both the iron and the steel usually contain 11 to 14 per cent of chromium. The Crucible Steel Company of America has been manufacturing steel of the stainless type since 1916. When great strength and hardness are desired, the chromium content must be reduced to 12 per cent. Such material has been used successfully for beater bars and bad plates and in jordan bars. For such purposes, stainless steel can be provided with a considerably greater degree of hardness and strength than bronze. It is about 10 per cent lighter in weight than bronze. Under ordinary conditions the material does not rust or tarnish.

Austentic and Pearlytic Steels—Doctor Mathews discussed austentic steels which differ from the pearlytic steels to which class the stainless steels belong. They are limited to steels containing a fairly high nickel and chromium content. These steels were first developed in this country by Charles M. Johnson, of the Crucible Steel Company of America, some fifteen years ago. In addition to chromium and nickel, various other elements may be added, notably silicon, and the silicon-chromium-nickel steels have been patented by Mr. Johnson and are known under the trade name of Rezistal. Some of the Rezistal metal appeared to be of promise in connection with the sulphite pulp process, as the alloy is extremely resistant to sulphurous acid and sulphite.

These alloy steels differ from ordinary steels in being totally nonmagnetic and they do not harden by quenching from a red heat. It is likely that numerous uses for these types of steel can be found in pulp and paper plants. Beater bars made of them have been in use for years with good results.

The paper by Doctor Mathews was followed with the keenest interest by all present and led Chairman Rooney to express the hope that one day we might have a thirty-day convention with a paper a day to permit of full discussion.

Amendments and Resolutions

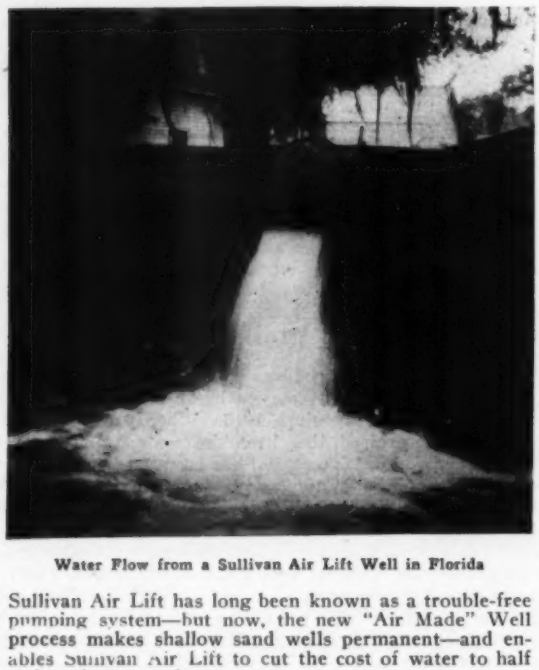
Under new business an amendment to the Constitution was brought up and adopted providing for the return to local divisions of 10 per cent of the dues collected by them. This amendment will constitute an addition to Section 3 Article IV of the Constitution.

A New Board of Trustees

Following a report of the auditing committee, which was accepted, Fred C. Boyce, chairman of the Committee on Resolutions, brought in a resolution recommending the election of a special board of trustees, one for one year, one for two years and one for three years, with the understanding that every year hereafter a member will be elected for the full term of three years. This special board of trustees is to have charge of all funds of the association in excess of $3,000, which will be under the control of the secretary-treasurer. Such funds in excess of $3,000 are to be invested in bonds such as are recognized as legal for investment by savings banks under State regulations, but not more than 10 per cent in any

DEPEND ON SULLIVAN AIR POWER

How a New Well System Reduces the Cost of Water



Water Flow from a Sullivan Air Lift Well in Florida

Sullivan Air Lift has long been known as a trouble-free pumping system—but now, the new "Air Made" Well process makes shallow sand wells permanent—and enables Sullivan Air Lift to cut the cost of water to half or less, in many places.

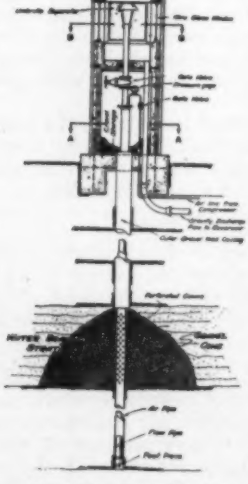
Often, water is being pumped from deep rock sources, while good water is available in sand strata only a hundred feet or so from the surface.

By utilizing this supply you can secure the economies of low power bills for lifting the water, and of small pumping plant investment—and shallow sand sources of water have been made reliable and permanent with the "Air Made" Well and Sullivan Air Lift.

Sand which would wear mechanical pumps, or choke the screens is pumped out, and coarse gravel is put in its place. Scores of these wells have already been installed, and in every instance the productions from the wells is steadily increasing.

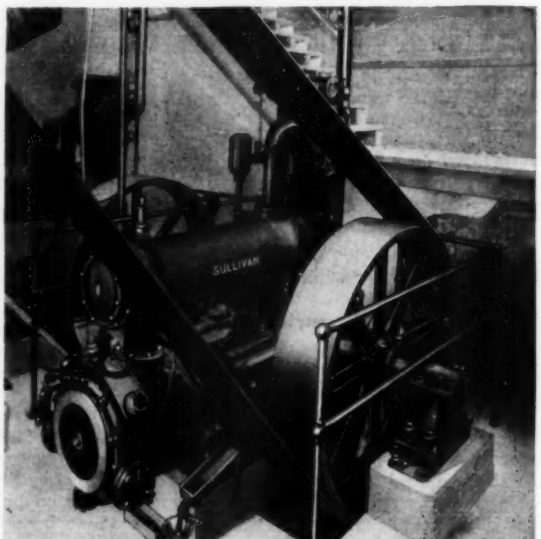
For pumping these wells, only Sullivan Air Lift is used. With no moving parts in the well, it is free of trouble from sand, mud, crooked wells, or varying water levels.

Send for Catalogs 8171-I, 8156-J.



Air Made Well Detail

Brown Company Uses Sullivan Compressors for Fifteen Years



Two Sullivan Angle Compound Compressors Now Operating for Their 15th Year at Brown Co.'s Plant, Berlin, N. H.

Fifteen years ago, when the Sullivan Angle Compound Compressor was new, the Burgess Sulphite Fiber Co., of Berlin, N. H. (now the Brown Co.) installed two of these machines.

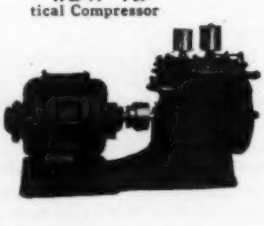
As the company grew and needed more air power, a third, a fourth, and recently a fifth Angle Compound were added. Many other mills also have staked their production and labor on the dependability of Angle Compounds.

Angle Compounds save floor space, foundations, and power—and they operate so smoothly a coin will stand on edge on the frame while the compressor runs at full speed. Capacities from 313 to 5100 cu. ft., are available.

For smaller requirements the Sullivan "WG-6" Compressor is recommended. It has "sweep control" unloading device, automatic lubrications, and total enclosure of working parts. Capacities from 68 to 500 cu. ft. The Brown Co., uses two "WG-6" Compressors in addition to their Angle Compounds.

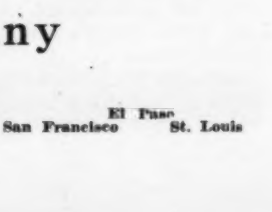
The "WL-22" and "WL-44" vertical compressors are 2-cyl. and 4-cyl. semi-portable, direct-connected machines, for isolated departments or standby or night service. Capacities 120 to 240 cu. ft.

Send for the Catalogs.



"WG-6" Compressor

"WL-44" Vertical Compressor



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single bond, except in the case of United States bonds. It was provided that Nelson R. Davis, of Cumberland Mills, Me., be elected as one member of the board and act as treasurer, the other two members to be named by the Executive Committee. Before the close of the meeting, Fred C. Boyce and Fred J. Rooney were named to the board to serve for periods of two years and one year respectively.

On motion, the resolution as presented was adopted by a rising vote.

Vote of Thanks

After formally expressing thanks to the City of Pittsfield and the adjacent communities, the Connecticut Valley Division and General Chairman John J. White were tendered a rousing demonstration of the appreciation of the association for the success of the arrangements, the men rising and cheering lustily.

Election of Officers

Then followed the report of the Nominating Committee and election of officers as set forth in the introduction to this story of the meeting. It was explained by the committee that Mr. Massey had expressed a desire to be relieved of the duties of treasurer, hence it was decided to combine the offices of secretary and treasurer in one secretary-treasurer. In connection with this, Mr. Boyce said that Mr. Massey deserved great credit for the work he did in organizing the association in the early days and he considered it would be a gracious thing for the incoming president to write Mr. Massey and express the appreciation of the asociation for his services to it.

After this was adopted, James G. Ramsey said there was another man in the room who had done more for the association than any other person present and he named Fred C. Boyce at the same time paying a well merited tribute to his work in the organization, and moved the passage of a vote of thanks to Mr. Boyce, which was accordingly carried into effect. Chairman Rooney subsequently moved that Peter J. Massey be made a life member of the association without dues, which was also carried.

Vocational Education in the Mills

J. Norman Spawn, chairman of the Educational Committee of the association, who was down on the program with R. W. Jenkins, of the Ohio State Department of Vocational Education, for a demonstration of vocational education in the mills, introduced the subject by announcing that the American Paper and Pulp Association, the Technical Association of the Pulp and Paper Industry and the Superintendents' Association had united to form a joint educational committee to develop an educational program for the pulp and paper industry. The committee as formed consisted of P. H. Glatfelter and Minor M. Beckett for the American Paper and Pulp Association, Allen Abrams and J. J. O'Connor for TAPPI, and Norman J. Spawn and Harry E. Weston for the Superintendents' Association Mr. Spawn then called on Mr. Jenkins to give a demonstration of the plant education program.

A Foremen's Conference

Mr. Jenkins first gave a description of what was being attempted to be done through the holding of foremen's conferences in paper mills. Premising that the progressive and ambitious worker of today was the foreman of tomorrow and the executive of the future, he said that industrial management should lend a willing hand in establishing a progressive road for ambitious employees to reach the goal of real executive leadership. In this way, foremen education included not only reinforcing the ability of a department head but also instructing the future executives.

It was important, he said, that plant conferences should be conducted by a trained conference leader, as many conferences had proved failures because of untrained leaders. It should be the aim of a competent foreman to determine what the worker should know and see that he had an opportunity to get this necessary job knowledge. At a conference, a good leader can pull from a group of foremen in the shortest time more real industrial and practical knowledge on a topic than can be found in any book on the subject, but it is a prerequisite that the subject be familiar to the foreman; if not, it was poorly chosen and the conference would be a failure.

Phases of a Conference—Mr. Jenkins said that the conference method was predicated on the assumption that the foremen knew the answer to a problem, the leader's job being to draw the answer out. To illustrate his thesis, he said he would put on a demonstration conference based on the understanding that such a conference should have five steps or phases, as follows:

1—To set up a list of facts based on practical experiences.
2—To cull and select worthwhile facts pertaining to the solution of a problem.
3—To evaluate functioning facts.
4—To enable or assist in reaching decisions.
5—To plan ways and means of carrying out or applying functioning facts.

Superintendents Assist—A group of fifteen men was assembled close to the platform and facing a blackboard to form a foremen's training class, Mr Jenkins taking the part of leader. As the topic of discussion, he selected and wrote at the top of the blackboard the following question:

1—What should a beater engineer know and be able to do in order to furnish stock adequately and satisfactorily?

Before proceeding to extract the answers, he inquired as to the average experience of the men forming the group. It was assumed that each of the men had had twenty-five years of experience and that the group represented a total of 375 years experience.

Answers were invited to the foregoing question, as stated with the following results:

1—Should know how to read his formula.
2—Should know how to manipulate his material.
    (a) Different practices for different stocks—how to break in his stock; (b) how to regulate his machine.
3—Should know condition of beater.
    (a) Whether it is consuming excess power; (b) how to determine speeds of beater rolls.
4—Keep in touch with improvements.
    (a) Know factors of quality and quantity.
5—Know how to keep the place clean.
6—Know how to match a sample as regards sizing, color density, hydration, opacity, ash content.
7—Know stock by feel when to jordan and how much.
8—How to handle men.
    (a) How to give orders; (b) prepare an understudy—how to teach new men; (c) persuade safety practices; (d) inform men as to compensation laws; (e) enforce rules; (f) understand his men and their interests.

Mr. Jenkins pointed out that the ideas expressed on the blackboard were the contributions of practical superintendents and hence of corresponding value. In reply to a query by Mr. Bidwell as to when time could be found in a 44-hour week to hold a meeting of this kind, Mr. Jenkins said that in Ohio such a meeting was held between 10 and 11 A. M.

Mr. Spawn said that with his company during the first year the men attended a conference on coming off shift, the company paying for their time. During the second year they received half pay and in the third and fourth year no pay. The conference or club was formed of thirty men.

This concluded the business of Friday's session, except for visits to mills and sightseeing trips in and about Pittsfield.

FRIDAY EVENING'S BANQUET

At the banquet on Friday evening, Fred J. Rooney acted as toastmaster, following a brief talk by John J. White, who voiced the thanks of the association to N. A. Campbell, managing director of the Hotel Wendell, and to W. Bradford West, of E. D. Jones & Co., who had greatly assisted Mr. White in arranging for the comfort and entertainment of members and guests during their stay in Pittsfield.

Mr. Gibson on Menances to the Industry

The principal speaker was George K. Gibson, salesmanager of the Mosinee Paper Mills Co., Mosinee, Wis., who attended the convention as the representative of the Salesmen's Association of the Paper Industry. After complimenting the

"The patented Elliott Bulletin Board, and the Elliott Plan, provide Management with the most practical means available for maintaining a daily contact with Men."

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YOUR management policies, your instructions, your safety rules and warnings—and all the other information you want to get before your employees—can be more satisfactorily presented to them through the ELLIOTT PLAN and the special Elliott Bulletin Board.

The daily change of actual news photographs, furnished in the Plan, guarantees renewed interest and attention daily.

The ELLIOTT PLAN is now being successfully used by the management of 38 paper mills in the United States and Canada to assist in making programs of accident reduction, greater productivity, higher quality and lowered costs, interesting, stimulating and effective.

A request to us to send a representative to show you all the units in the complete ELLIOTT PLAN does not obligate you in any way. It is the most effective way for you to judge whether the ELLIOTT PLAN will also help you. Please address

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audience on the fine appearance that they presented—"A composite of the handsomest set of men I have addressed in a long time,"—he mentioned that he was there as a bearer of the fraternal greetings of the Salesmen's Association of the Paper Industry and pointed out that both associations, superintendents' and salesmen's, had a common father and mother—demand and supply. "Being twins, our interest becomes your interest and your interests and welfare our interests and welfare." He said that the men of the Salesmen's Association appreciated it as an honor to be represented at the meeting of the superintendents.

In viewing the industries of the country, Mr. Gibson said there was no more progressing or finer one than the paper industry, but as conditions are studied closely it would be found that it was not keeping pace with the other industries in the titanic struggle that is now going on in America to make business profitable. He said there were serious menaces confronting the industry, the more important being overproduction and price cutting. Because of this the paper industry was not yielding an adequate interest on the investment. Conditions have gone topsy turvey with a production of 12,500,000 tons and sales of only 10,000,000 tons, and that 2,500,000 tons of excess product had put the industry in the red ink column. One of two parties always sets the price, either the buyer or the seller. It is the buyer who sets the price when the product is piled up before him and this has persisted for the past ten years and will persist until production is curtailed and a sellers' market is created. It was true that volume of production does cut down costs provided the product can be sold. What Ford did not know was that when America became prosperous the people would want a better car for which they were ready to pay more money.

Papermakers Need a Subsidy as Much as Farmers Do—Mr. Gibson paid his respects to the McNary-Haugen bill, which was intended to take care of overproduction of farm crops. He said that the paper industry could reasonably expect and have an equal right to a government subsidy to take care of the 2,500,000 ton overproduction of paper and paper products through such a tax on the people as was proposed by the McNary-Haugen bill.

The Problem Before Us—Mr. Gibson stressed the point that the problem before the industry was to sell it to the people and it was the duty of all to help solve this problem. He called attention to conditions in the bag industry and read a series of advertisements that had appeared in a paper trade journal offering to install bag machines for the encouragement of new firms of bag producers in competition with existing firms, with an indiscriminate appeal to all races and nationalities. Machines were to be let for three years without any immediate cash payments, to stimulate added manufacture. He asked how the bag business was going to survive such uneconomic practices and urged the immediate starting of a campaign to put an end to overproduction. A beginning could be made by mills refusing all orders that did not show a profit, and he said that if every man present would go back to his mill and declare that he would not be a party to overproduction in the future the evil would be overcome. He said there was no better paper made anywhere on earth than right here in America.

Problems of the Mill Superintendent

M. W. Cronkhite followed Mr. Gibson with what he called "a little talk" on the problems of the mill superintendent. He said he did not think the superintendents' association was doing the right thing in depending so much on the allied industries for information concerning machinery and processes. He suggested that a committee of the association be formed to classify and give out this information because if the paper industry was to prosper this prosperity must come largely through the superintendents.

SATURDAY'S FINAL SESSION

As a general rule the closing sitting of any association on the final day of convention is sparsely attended. When the Saturday morning session of the Superintendents' Association was called to order at 10 o'clock there were fifty-five superintendents and visitors present. The first business taken up, after President Rooney had made the suggestion that every superintendent who had attended the meeting should prepare a report of what he had seen and heard for the benefit of his mill manager, two papers that had been held over from the previous sitting, including one on the adaptability of the rod mill for the treatment of fibers, and another on radio control of moisture in paper were presented. In addition to these there were the account of the operation of the vacuum paper machine dryer and a short paper on groundwood mill practice.

Use of the Rod Mill in Pulping

Before turning to a description of the rod mill, W. A. Gocke, of the Shartle Brothers Machine Company, gave an interesting historical account of developments in the invention of apparatus for beating and refining pulp. Since the period immediately antedating the French Revolution in 1799 when Nicolas Louis Robert made the first continuous paper machine now known as a Fourdrinier, 90 per cent of papermaking research and invention has gone to the improvement of it until today the fourdrinier machine is one of the marvels of the time. Progress in refining methods have not kept pace with paper machine developments and the cost and efficiency of beating and refining are out of proportion when compared with methods and costs of converting pulp into paper. As in the beginning of the nineteenth century the beater room was out of balance with the papermaking process, the machine room today is out of balance with the beater room, Mr. Gocke said.

The beater of today is essentially the same in practice as it was in 1750, though the engines are larger and speed of circulation has been increased. The jordan refiner has been highly developed, but it is only within a recent period that it has been extensively employed. Because of the high cost of beating any machine which can be adapted to the refining of pulp was of interest to papermakers.

He then described the construction of the rod mill, which in its simplest form consists of a revolving cylinder having a length approximately twice its diameter, that rotates horizontally about its long axis. The cylinder is partly filled with rods, all lying parallel which roll and tumble against one another with the rotation of the cylinder. The feed is continuous, the pulp entering into one end of the cylinder, working its way through the rotating rods to be discharged at the other end of the cylinder. The refining action of the rods resembles to some extent that of the kollergang or edgemill used so extensively in Europe. The rod mill has, however, a much greater capacity and lower power consumption per ton.

Mr. Gocke gave credit to the pulp and paper section of the Forest Products Laboratory at Madison, Wis., for work in the development of the rod mill which made it possible to employ it commercially as a definite piece of papermaking machinery. As to power consumption, G. H. Chidester has shown that each unit of power expended in the rod mill in the reduction of Southern kraft is equivalent to one and two-thirds units of power necessary to produce the same sheet by refining in beaters and jordans.

The rod mill appears to be peculiarly applicable for the treatment of kraft pulp, though one of the latest and most successful applications of the apparatus has taken place in the straw industry. Mr. Gocke expressed the opinion that every straw mill in the country would soon be processing their stock through rod mills.

There was no discussion of this paper and Ogden Minton, president of the Minton Vacuum Dryer Corporation, Greenwich, Conn., was invited to discuss developments in the operation of the vacuum dryer. He did not read a prepared paper but touched on the main points of interest to superintendents, stopping now and then to reply to questions.

Operation of the Vacuum Dryer

Comparing the vacuum dryer with standard dryer drums, tests have shown a thermal efficiency of the vacuum dryer of from 95 to 97 per cent, while Mr. Minton said he had not yet received an authenticated test of a paper machine with standard dryer section that operated at a thermal efficiency in excess of 65 per cent. To put it differently, the vacuum

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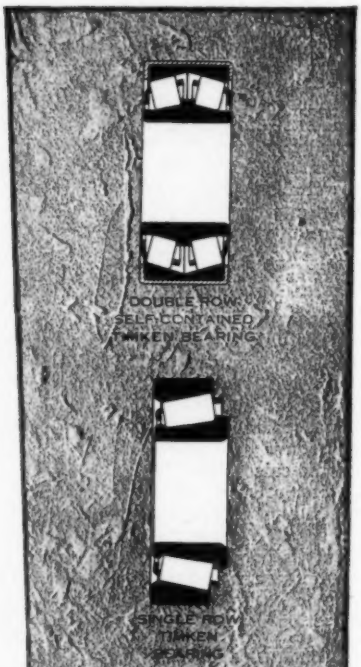

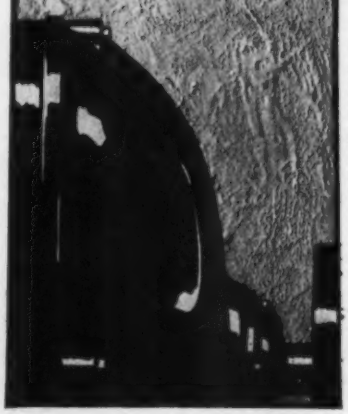

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dryer is capable of drying paper with less steam than is required by a standard bank of dryers.

In order to give his hearers an idea of actual operations with a vacuum dryer, he instanced the installation at Price Bros. & Company's mill at Kenogami. This, which has been in continuous operation since December, 1926, contains twenty dryers, 5 ft. in diameter with a face of 152 inches. It is equipped with one top and one bottom felt, together with hand and automatic guides and automatic felt stretchers. Attached to the dryer are a condenser, dry vacuum pump, air cooler, etc. It has been running continuously drying standard newsprint paper at a speed of 700 ft. per minute, the speed being limited by the wet end to the figure named, though the dryer is capable of operating satisfactorily at a much higher speed, two machines being now under construction to operate at 1,200 ft. a minute.

Handling Breaks—One of the question put to Mr. Minton with great regularity is, "What happens when the paper breaks in the vacuum dryer?" The invariable reply to this is that it is very unusual for the paper to break in the vacuum dryer. A partly torn sheet or a sheet with a bad slug in it will as a rule pass from the third press through the vacuum dryer and not break till it gets out of it.

If the paper going in is too badly torn it may break inside the dryer. If this happens the vacuum is broken, the windows opened and the paper removed just as in a standard dryer. It takes about the same time to get the paper out and the machine started up again as is the case with a standard dryer.

Mr. Minton said that at Kenogami, individual runs had lasted as long as fifty-seven hours without a break of any kind in the vacuum dryer, the machine running on standard newsprint at 700 ft. a minute. Because of the low drying temperature, the shrinkage of paper is much reduced and hence the sheet is not so prone to break.

Report of Tests—Mr. Minton quoted from the proceedings of the Technical Section of the Canadian Pulp and Paper Association, in which G. G. Mitchell, assistant to the president of Price Bros. & Co., Ltd., is credited with saying in regard to a two-weeks' test of the Minton vacuum dryer that during the two weeks the average production of the machine, operating at a speed of 690 to 698 ft. a minute was 55.3 tons, trimming 142 inches of standard weight newsprint paper, and there was a period of three consecutive days when the production of the machine averaged 57.5 of 57.6 tons. Mr. Mitchell deemed this performance of interest in connection with the question that is often asked, "How safe is it possible to operate a Minton vacuum dryer, and how does it compare in production performance with the open stack dryer?"

Mr. Minton said that the entire operating and engineering staff of Price Bros. & Co., Ltd., had made an intensive study of the vacuum dryer, and as a result of this had ordered two vacuum dryers each 234 inches wide, designed to be run at a maximum speed of 1,200 ft. a minute. These two vacuum dryers will be delivered late this summer for installation in an addition that is being made to the Riverbend mill of Price Bros. & Co., Ltd.

New Engineering Features—The new vacuum dryers will contain several engineering features far in advance of present practice, including an individual worm drive to each drying cylinder with individual motors attached to each of the worm drives. Some of these motors will be interlocked electrically at critical points and the other motors used as trailing motors so that a positive or negative torque can be applied as desired to control the felt and paper tension throughout the bank of dryers. Every roll will be mounted on SKF spherical roller bearings. The entire drive will be fitted with dynamic braking in order to make it possible to stop the dryer quickly. If this were not done, the dryer might run for a long time as the anti-friction bearings do not exert sufficient friction to stop the dryer anywhere nearly quick enough. These new vacuum dryers will contain 22 dryers, 5 ft. diameter, with a face of 234 inches and a baby dryer 21 inches in diameter. Similar machines are regularly equipped with 44 dryers of the open type.

Used in Drying Fine Papers—Mr. Minton mentioned the adaptability of the vacuum dryer for use in the drying of tub-sized papers. With it, a paper the equivalent of loft-dried paper, could be produced in reels and calendered in reels with a tremendous saving in labor, steam and floor space. The vacuum dryer may be substituted for the second bank of dryers on a writing paper machine and the paper after passing through the size tub and size press can be passed through the vacuum dryer to make a paper the equal of loft-dried paper in one operation.

Rosin sized papers require more heat than is yielded by a vacuum dryer. In a writing or book machine, the vacuum dryer can be substituted for the standard bank of dryers and the paper dried down to about 14 per cent, after which it can be taken out of the vacuum dryer and passed over four or five very hot dryers in the atmosphere, when rosin sized sheets will show a decided improvement in sizing qualities.

Pulp of all kinds is amenable to treatment in the vacuum dryer, Mr. Minton said. Pulp so dried is said to be more hygroscopic, stronger, and of a better, cleaner color than pulp dried in the ordinary way. He said that board mills would benefit by the vacuum dryers since the number of dryers could be cut in half and the same amount of board produced.

No Speed Limits—As to speed limits, the impression was gained by Mr. Minton's listeners that there was no limit where vacuum dryers are used. The new machines are designed to run at 1,200 ft. a minute but they could be run up to 1,500 ft. just as well.

Choice of Felts—Of great importance in the operation of the vacuum dryer was the choice of felts. The best results were obtained with an open porous felt. Mr. Minton contrasted the porosity of some of the felts experimented with by blowing the smoke of a cigar through them. The most efficient felt gave a free passage to the smoke, whereas less satisfactory felts of compact structure resisted the passage of smoke; the kind of felt used made all the difference in the world, he said. Felt life was increased considerably where vacuum dryers are used, the number of days' service extending to 105 as compared with a life of forty-two days on an old machine. Mr. Minton exhibited a portion of a felt that had been running for 151 days on newsprint paper.

Mr. Farnsworth Pays Tribute

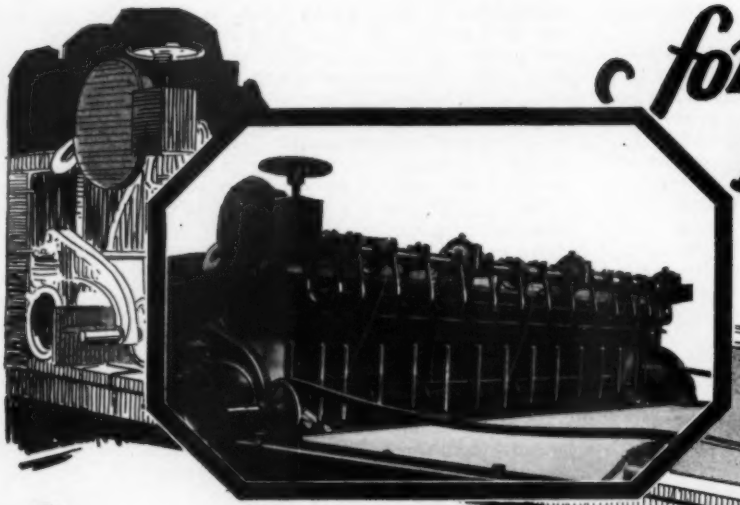
The discussion was brought to a close by F. C. Farnsworth, inventor of the Farnsworth system of drying, who said the association, and in fact the entire industry, should extend its thanks to Mr. Minton in recognition of the courage he had displayed in carrying on his work to a successful conclusion, and proving what had previously been claimed that "The vacuum dryer marks a revolutionary improvement in the art of papermaking second only to the advent of the fourdrinier paper machine itself." This motion was put to the meeting by Chairman Rooney and carried unanimously.

Observations in a Groundwood Mill

Levi A. Fralick, of the Algonquin Paper Corporation, Ogdensburg, N. Y., presented a discursive paper on the saving of tailings and other wood waste in chemical and mechanical pulp plants. He remarked that some of the existing newsprint mills in the United States are being converted to the manufacture of heavy lines of paper and board, and that these mills are looking for waste, coarse rough material that could be reduced to a substitute fine enough to be worked in with tailings and bull ditch rejections to make a respectable lap. He suggested that scrap material and rejections from groundwood mill should be saved for the use of paperboard makers.

Dressing Pulpstones—He touched on the treatment of pulpstone. If all pulpstones were of the same quality and grit there would not be so much trouble in maintaining an even grade of pulp, but there was a vast difference in pulpstones coming from the same quarry to say nothing of stones coming from different quarries and all have to be burred or dressed differently, according to grit, hardness or softness of the stone.

Mr. Fralick said it was a difficult matter to standardize or use one burr on all grinders and get the same result from



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Wires last 10% *to* 15% *longer*

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each grinder. If the same burr with the same cut per inch is used on soft, medium and hard stones alike it did not require very close observation to prove that some of the grinders make good stock, others medium stock and some nothing but slivers. He recommended to use a medium stone for a starter and then work both ways, that is, use a burr that will condition the hard stone and produce nearly the same grade of stock as the medium stone. Then try the same idea out on the soft stone and it will be found that the stock is more uniform and of a more even fiber.

Mechanical pulp standardized to a given freeness test will not run the same on all the different sizes, makes and speeds of different machines and neither can the different grades and weights of paper be made from the same grade of pulp.

Care of the Jig—He touched on the care of the jig or lathe. If the fork which holds the burr has too much play or side movement when the burr is forced across the stone it will cause the burr to run crosswise against it and cause the operator to condemn both the burr and the man who made it, when by tightening up on the loose ends the difficulty would be overcome, the burr last longer and put a better cutting surface on the stone.

The Norton Stone—Herbert J. Desmond discussed the paper asking if any of the superintendents present had any experience with Norton stones. He understood that the Norton Company was making three grades of stone but that it was difficult to get definite information concerning service from the stones since they had not been long enough in use. Most of the men had a favorable opinion of the Norton stone and Mr. Fralick said he was ready to install one when he was in possession of certain needed information.

Radio Control of Moisture in Paper

The application of the principles of radio telegraphy and telephony for detecting, recording and automatically correcting moisture variations in a moving web of paper was described in the paper on "Automatic Control of Moisture in Paper Manufacture" by J. G. Callan and Albert Allen. Mr. Allen is the inventor of the instrument, which is a development from the Verigraph Weight meter, a device employing radio frequency currents and circuits of radio type to measure the weight of moving webs of rubber and other materials through their effect in changing the capacity of a radio-frequency condenser as they pass through. Mr. Allen undertook the development of an apparatus using the same general arrangement of circuits, adapted to recognize, record and correct the moisture in paper. It was stated that a degree of moisture sensitivity is obtained higher than is required by commercial conditions. The Verigraph moisture controller has been in use for a year on a fast-running newsprint machine. With hand control of moisture there is a variation of about 3 per cent, and when it is considered that 8 per cent of moisture is a good average figure to insure proper handling on the printing presses it is necessary to keep the average moisture at about 7 per cent or a little less where hand control is used. With a Verigraph the average moisture ran a little over 8 per cent with a variation of 1 per cent, and with such an even moisture the number of breaks were reduced so that great savings are effected.

No expert knowledge of the principles of the instrument are necessary on the part of operators; it can be operated without knowing its principle, just as a watch can be read without knowing watchworks.

The authors of the paper described the construction of the instrument in a general way and also reviewed the construction and operation of the accompanying equipment for indicating and recording moisture. It was represented that the apparatus would give a "moving average" indication of the moisture of any paper passing it, as well as an available record, so that the backtender could see not only how moist the paper is but whether it was getting moister or drier. A further claim was made that the instrument was capable of controlling automatically the drying of paper within considerably narrower limits than it could be controlled by hand.

In the discussion that ensued, Tom Harvey inquired as to the cost of the instrument and was told that the price was $2,500 and $400 additional for the automatic machine. In reply to further questions, Mr. Allen said that the instrument worked satisfactorily on board machines and two had been recently placed in a board mill.

Mr. Allen said the instrument could be regulated to control the moisture in a sheet or board at any degree from 1 to 6 per cent.

Praise for Mr. Allen—Chairman Rooney complimented Mr. Allen on his presentation of the subject and said the Atlantic Precision Instrument Company had done well in sending him here as he had made a better impression than a salesman who was usually over enthusiastic could have made.

This brought the proceedings to a close except for the installation of Benjamin T. Larrabee as president of the association and the announcement of the election of Fred W. Boyce and Fred J. Rooney to membership in the special board of trustees provided at a previous sitting. After a vote of thanks to Retiring President Rooney, proposed by Mr. Larrabee, the meeting stood adjourned.

Northeastern Super's Meeting

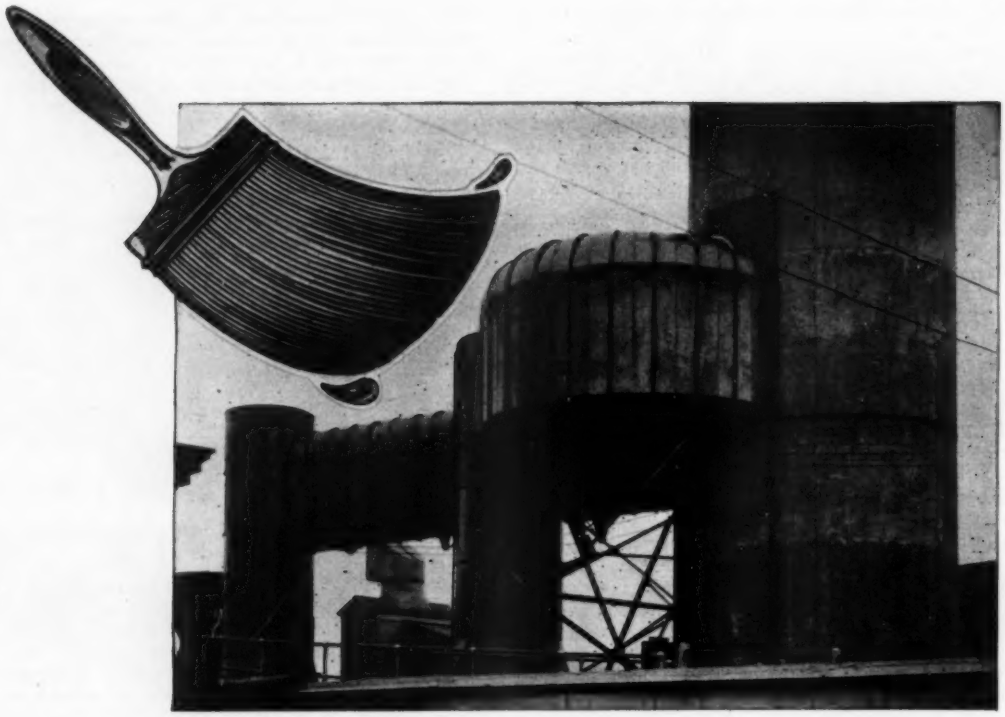
Spring Meeting Held at University of Maine

THE pulp and paper mills of Maine, New Hampshire and Vermont were well represented at the Spring Meeting of the Northeastern Division of the American Pulp and Paper Mill Superintendents' Association, held at the University of Maine, Orono, May 11 and 12. The attendance included Hugh J. Anderson, Eastern Manufacturing Co., South Brewer, Me.; F. K. Becker, salesmanager, Bird Machine Co., South Walpole, Mass.; F. C. Bersworth, Boston; Prof. C. A. Brautlecht, University of Maine Pulp and Paper School, chairman of the Northeastern Division; William H. Cape, S. D. Warren Co., Cumberland Mills, Me.; P. W. Carr, National Aniline & Dye Co., Boston; A. C. Cloudman, S. D. Warren Co., Cumberland Mills, Me., secretary-treasurer of the Northeastern Division; Francis J. Desmond, Keyes Fibre Co., Waterville, Me.; Herbert J. Desmond, Keyes Fibre Co., Shawmut, Me.; H. Ordway Furbisch, S. D. Warren Co., Cumberland Mills, Me.; Hebron H. Hackett, Eastern Manufacturing Co., South Brewer, Me.; Lymund S. Hatch, Penobscot Chemical Fibre Co., Great Works, Me.; John A. Harlow, Penobscot Chemical Fibre Co., Great Works, Me.; A. W. Hutchins, Keyes Fibre Co., Shawmut, Me.; Thomas J. Keenan, THE PAPER INDUSTRY, New York; W. T. Kilgore, Rogers Fibre Co., East Poland, Me.; A. C. King, Keyes Fibre Co., Shawmut, Me.; Henry F. King, Eastern Manufacturing Co., South Brewer. Me.; A. B. Larchar, Penobscot Chemical Fibre Co., Great Works, Me.; Ben. T. Larrabee, S. D. Warren Co., Cumberland Mills, Me.; Peter J. Maasbyll, S. D. Warren Co., Cumberland Mills, Me.; Ambrose M. McDonald, Eastern Manufacturing Co., South Brewer, Me.; Ed. J. McDonnell, Groveton Paper Co., Groveton, N. H.; F. S. McDonnell, Tileston & Hollingsworth, Boston; Ed. F. McGonagle, Belmont, Mass.; John A. Murray, William A. Hardy & Sons Co., Fitchburg, Mass.; J. J. O'Brien, The Paper Mill, Boston; Hector Paul, Edinburgh; L. D. Post, The Paper Mill, New York; George E. Pratt, Simonds Saw and Steel Co., Fitchburg, Mass.; W. H. Randall, Keyes Fibre Co., Waterville, Me.; Fred Rice, Boston; Richmond W. Smith, Bird Machine Co., South Walpole, Mass.; W. D. Sommerville, Eastern Manufacturing Co., South Brewer, Mass; G. D. Watson, Keyes Fibre Co., Waterville, Me.

Several of the members were accompanied by their wives and daughters, who had places at the banquet at Lucerne-in-Maine Log House, which brought the meeting to a close on Saturday evening.

Winner of the Golf Tournament

On the afternoon of Friday, May 11, a number of the members competed in a golf tournament on the 18-hole course of the Penobscot Valley Country Club at Orono, on the State highway between Bangor and Old Town. The trophy, donated by the Orono Pulp and Paper Company, was a small silver cup. This was won by Ed. J. McDonnell, general manager of the Groveton Paper Company.



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Mill Visitations

The forenoon of Saturday was occupied by trips in motor cars to mills in the vicinity, the following plants being visited: Eastern Manufacturing Co., South Brewer; Orono Pulp and Paper Co., Basin Mills; International Paper Co., Orono; Penobscot Chemical Fibre Co., Great Works; Chapman Fibre Company, Old Town. The members came together for luncheon at the University of Maine, this being attractively served by several of the lady students in Balentine Hall. After luncheon, a divisional meeting was held in Aubert Hall, the chemical department of the University of Maine.

A Business Sitting at the University

Dr. C. A. Brautlecht, head of the department, presided as chairman of the division. He called upon A. C. Cloudman to read the minutes of the fall meeting held at Bethel last year which were adopted as read. Following this, Chairman Brautlecht brought up the question of place and time of next fall meeting. It was decided to hold it at Lancaster in the White Mountains not later than the first week of October, 1928.

Refunds to Local Divisions

Support of local divisions by the national association was the subject of some discussions, the consensus of opinion favoring a refund by the national treasurer of 10 per cent or more of dues paid by members of local divisions, for the upkeep of the divisions and expansion of their work.

History of the School of Papermaking

Chairman Brautlecht sketched in a brief and interesting fashion the history of the School of Papermaking at the University of Maine. The course was started in the spring of 1912 by Prof. Ralph H. McKee, who, with others, had realized the desirability of training young men in pulp and paper chemistry and technology. His idea was to model it after the English school of paper technology at Manchester. Work during the first year's course of study, is identical with that required in the school of technology of the University, and Military training is compulsory, being required by the State. Analytical chemistry and microscopic technique are studied during the second year and at least a reading knowledge of French and German is a requirement. Chemistry and mathematics in their higher forms are also subjects of study in the second year of the course.

New Refiner for Tailings

The program of the meeting announced a paper by F. K. Becker and Richmond W. Smith, of the Bird Machine Company, dealing with felt conditioners, pulp screens and refiners. Mr. Becker was the speaker and in opening the subject he gave an explanation of the sales and engineering methods of the company with which he is connected. Following this he described the operation of the newest piece of machinery developed—the Bird-Haug refiner, which appears to be an improvement on the rod mill. This machine has not as yet been put on the market, but he said it had been used for several months in reducing the tailings from a groundwood mill with eminently satisfactory results. The Hercules Powder Company had used it for refining chips from which rosin had been extracted, and it proved to be well adapted for this. One machine had been installed at the plant of the Great Northern Paper Company, he said. He gave a blackboard demonstration of the operation of the machine.

The principle employed in the Bird-Haug refiner is one of rolling or crushing, accomplished by means of steel rollers held by centrifugal force against the inside surface of a steel cylinder. The rolls are positively driven by an independent gear drive, so as to insure proper roll speed. Tailings are fed into one end of the machine and carried along the face of the refining cylinder by conveyor plates to be charged at the other end as refined stock. The power consumption approximated eight to ten horsepower per ton of pulp. The cost of the machine with dewatering atachment was $10,000. The cost of the refined pulp was put at $5 a ton which represented a great saving when compared with pulp at $25 a ton.

Samples of the work done by the machine were passed around and inspected with great interest.

Demonstration of Vickery Doctor

Mr. Becker then demonstrated the Vickery doctor, explaining its advantages when used on dryers, calenders and breast rolls, particularly press rolls. Drawings and layouts were shown of the various applications of the Vickery doctor, which, he pointed out, was of a particular benefit in keeping all rolls used in the manufacture of paper perfectly clean under all conditions.

A general discussion followed. Members were invited to ask questions on any subject pertaining to papermaking.

A. B. Larchar asked if any of those present could enlighten him as to how changes in pulp manufacture might effect changes in the quality of paper produced from the pulp. Objection was made by Mr. Sommerville that the question was too general in its nature. Mr. Larchar said he had brought up the subject in the interest of pulp manufacturare also subjects of study in the second year of the course.

Cause of Variations in Pulps

He recalled that on one occasion, without any known reason, a paper mill reported that the pulp supplied had resulted in the production of a sheet 10 per cent better than that ordinarily obtained. So far as he knew the pulp had been made in the same way as was previous lots.

Ed. J. McDonnell made the point that pulp manufacturers should adopt a standard method of determining the papermaking properties of their pulps with special regard to the

Meeting of Northeastern Division of Superintendents' Association at University of Maine, Orono, Maine

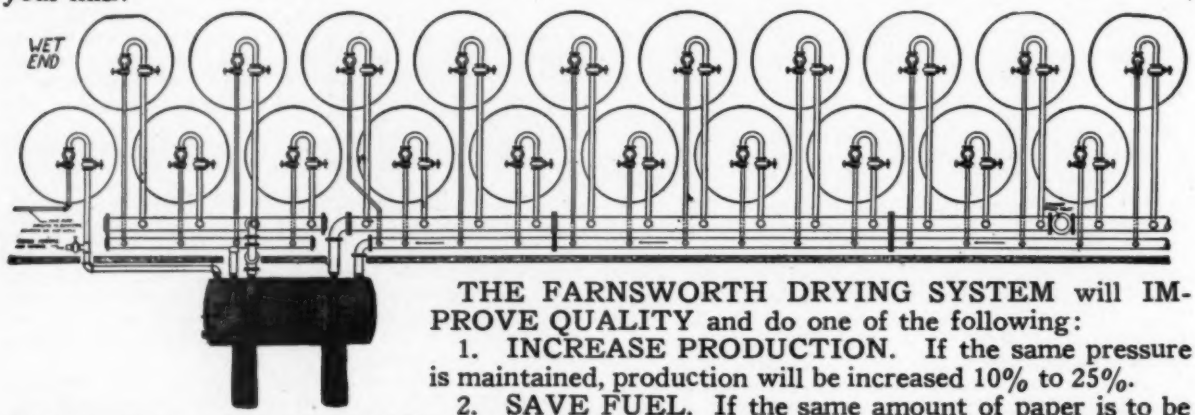
PRODUCTION and PROFITS

Mills are beginning to realize that profits are not to be found in merely building additions to the mill, installing more dryers and producing more paper. Profits must be found in improving the quality of the product; eliminating wastes; and increasing the production without increasing floor space, machinery or employees.

When four tons of coal will do the work, why burn five or six? And when a paper machine can produce sixty or sixty-five tons, why be content with fifty?

The Farnsworth Company are specialists in heat reclamation. Farnsworth systems have been designed through years of research, experiment, and development to increase drying and heating capacity, and to save fuel.

Why not let the Farnsworth Company help you in your problems of increasing profits in your mill?

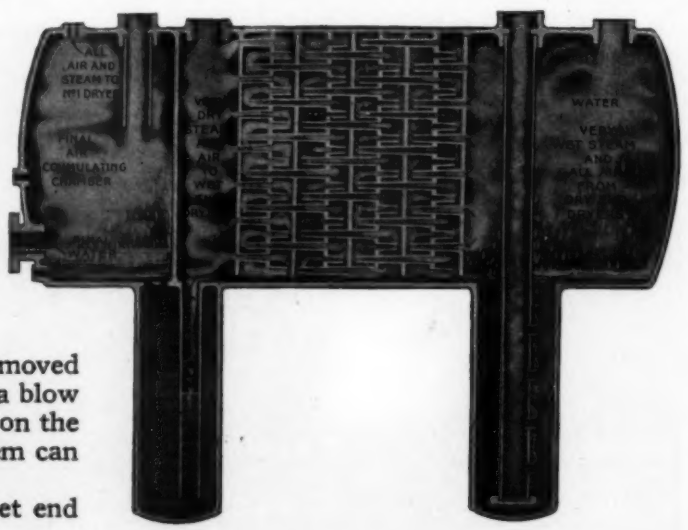


THE FARNSWORTH DRYING SYSTEM will IMPROVE QUALITY and do one of the following:

1. INCREASE PRODUCTION. If the same pressure is maintained, production will be increased 10% to 25%.

2. SAVE FUEL. If the same amount of paper is to be made, pressures will be cut in half to dry it. This reduces the back pressure on the engine and the engine uses less steam. Consequently less fuel is burned.

QUALITY is IMPROVED because an even temperature is maintained across the face of every dryer, and a graduated temperature through the paper machine. The paper is not burned when it hits No. 1 dryer and a higher grade of paper is produced. Shrinkage is reduced and cockles eliminated where improper drying conditions have been causing them. There are no traps, regulating valves, or other working parts in the Farnsworth Drying System.



Water seals provide pressure drop and drainage between sections. A highly efficient counter flow separator is built right into the drying system unit to separate thoroughly the steam before it enters the wet end dryers.

Even temperatures are maintained across the face of every dryer because all the water and air is continuously removed from every dryer. No other system has a blow through on every dryer including those on the wet end, therefore no other drying system can be so effective.

Temperatures are graduated at the wet end by a drop in pressure between sections.

FARNSWORTH COMPANY

Heat Reclamation Engineers

CONSHOHOCKEN, PENNA.

quality of the finished sheet. Pulp trouble in paper mills would not happen so frequently if this were done.

W. H. Cape had noted that when soda pulp had stood over the week end it was difficult to get bulk in the paper.

Dr. Brautlecht asked if the effect complained of might not have been caused by hydration.

Papermaking at the Hammermill Plant

The session closed with an exhibition of still and animated pictures of pulp and paper manufacture as carried out at the plant of the Hammermill Paper Company, Erie, Pa., a complete description of which was given in the September, 1926, issue of THE PAPER INDUSTRY, in connection with a report of the annual meeting of the Hammermill Bond Agents.

On account of the lateness of the hour it was found impracticable to inspect the laboratories and buildings of the University. The members were obliged to hurry back to Bangor in order to get ready for the trip to Lucerne-in-Maine where the banquet was held.

Lucerne-in-Maine is an all-year resort some twelve miles from Bangor on the road to Bar Harbor. At Log Lodge, a hotel built of decorated logs, fifty-six persons sat down to a tasty and well-served repast. There was the usual speech-making at the close of the dinner, Professor Brautlecht acting as toastmaster. The speakers included the Rev. Ashley A. Smith, L. D. Post, Hebron H. Hackett and Ed. J. McDonnell. Mr. McDonnell gave an informing account of the program for the national meeting in Pittsfield and Mr. Hackett proposed a vote of thanks to all who had assisted in the success of the spring meeting.

Tappi Fall Meeting at Wausau

The executive committee of the Technical Association of the Pulp and Paper Industry has voted to hold the Fall Meeting of the association at Wausau, Wis.

Considerable attention was given to the courteous invitations of paper manufacturers to hold this meeting at Buffalo, N. Y.; Richmond, Va.; and Chicago, Ill. All these cities offered attractions that would make them desirable ones in which to hold such a meeting.

Wisconsin is second in membership standing in the Technical Association, being surpassed only by New York. The many technical developments that have taken place in the paper mills of Wisconsin qualified this State as the logical one in which to hold such a meeting and the very favorable location and facilities of Wausau led to its selection.

Gold medals are to be awarded at this meeting for conspicuous work in the paper industry to Ogden Minton, inventor of the Minton Vacuum Dryer and to W. H. Mason, inventor of Masonite and other steam exploded wood processes.

Paper-Mulch Tests Show Favorable Response

Paper of the type used as a mulch in pineapple production in Hawaii has been found to be applicable also to a wide variety of crop plants in the eastern United States Department of Agriculture, who has recently completed four years' study of the possibilities of paper mulch and its effect on plant growth. Increased yield and growth have been secured by the use of impervious paper mulch with such common garden crops as corn, beets, carrots, green beans, squashes, and others. In many instances the yield was from one-half to three time as great as from unmulched crops.

The type of paper used in these trials—the heavy, asphalt-saturated and coated thermogen—was especially designed to withstand the weathering of the three to five years' duration of the pineapple plantation. It seems possible that a less durable paper may be cheaper and as satisfactory over a short period. The extent to which paper mulch will find a place in gardening and agriculture can be determined only through wide individual experimentations.

Stockholders of P. H. Glatfelter Co., Spring Grove, Pa., recently met and named the following board of directors: W. L. Glatfelter, P. H. Glatfelter and W. S. McClellan. The board organized by electing W. L. Glatfelter, president; P. H. Glatfelter, vice-president and treasurer, and W. S. McClellan, secretary.

Organization

By C. E. TORRANCE
Supt. Planning and Personnel, Bryant Paper Co., Kalamazoo

Presented at a joint meeting of the local divisions of the Superintendents, Cost and Technical Associations of the Paper and Pulp Industry, Kalamazoo, Michigan, May 17, 1928

The Nature of Organization

NO MATTER how large or how small an industry may be, or of what nature it may be, there are three elements which must always be used, controlled, and transformed and these three elements are:

(a) Materials
(b) Time
(c) Expense

The degree of success attained is directly proportional to and depends entirely upon the effectiveness of the use and control of these elements.

The only satisfactory known means of using and controlling them successfully is by **Organization** through the media (or tools, if we may so call them) of—

(a) Policies and Plans
(b) Plant, Machinery and Equipment
(c) Operating and Processing Methods

Organization can be likened to a machine, constructed with a definite object in view,—that of producing certain desired results with the proper tools, in the best possible way, and with the minimum of cost.

A machine is a systematic grouping of inter-related mechanisms which work together to produce a definite predetermined result.

True **Organization** is also a systematic grouping of inter-related mechanisms (human beings) whose functions and activities **Must** work together co-operatively if the desired result or end is to be attained.

Exactly like a machine, **Organization** must be properly designed, and constructed with the proper materials, or it will not produce the intended results. As a matter of fact, the design and construction of an organization which will function properly and produce the desired results is a far more serious and delicate task than the design and construction of any known machine.

A machine is an inanimate entity composed of its various inanimate mechanisms, using inanimate and inflexible tools, incapable of thought at any time, and capable of activity only when some driving power, controlled by a trained operator, is applied to it, and even then only along certain prescribed and constrained lines.

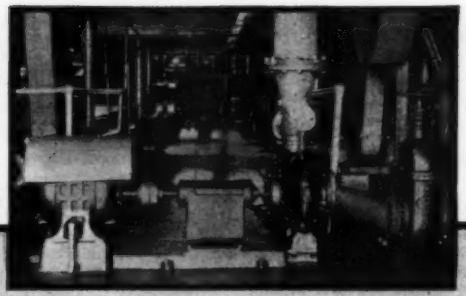
But let us for the moment consider **Organization** which has been figuratively likened to a machine. How like a machine it is in form and yet how different in substance. Its tools are anything but inflexible. Their very nature demands the utmost flexibility. And the mechanisms of the organization machine—are they inanimate, incapable of thought, capable of activity only when some driving power is applied, and then only along prescribed lines? No indeed.

The mechanisms of the organization machine are human beings, each one with unknown latent energy and power within himself, capable of either injuring the machine or making it work as intended—to produce the results for which it was designed.

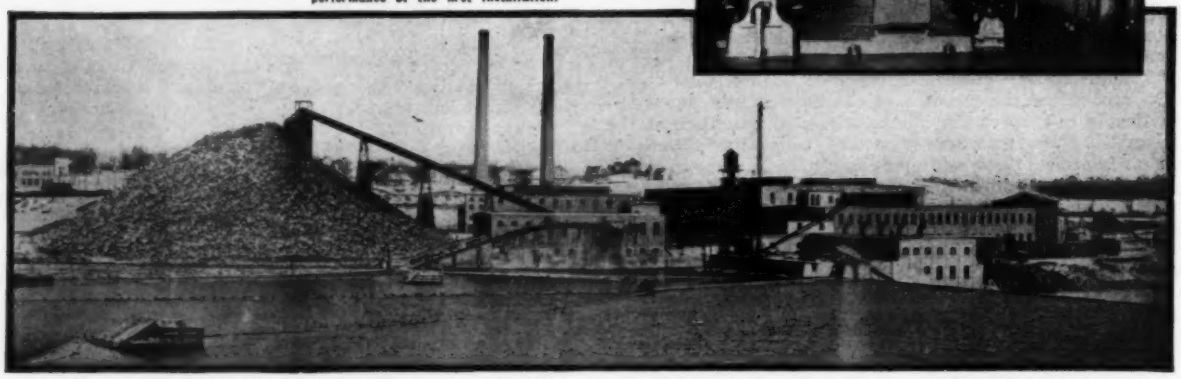
These human mechanisms must be guided—they must be trained, reasoned with and led,—not driven. Their energy, directed into the proper channels, and applied where it should be, will insure success,—but, if misdirected, misguided, or allowed to be expended without thought of the outcome, chaos will inevitably result.

The power required to make the organization machine function properly does not, as in the ordinary machine, come from the outside. It is latent within each individual mechanism. It is immeasurable in some mechanisms, very limited in others, and it is because of this wide variation in latent power and energy in the various mechanisms, that the correct design and construction of the organization machine becomes a delicate problem.

First it handled No. 1 Machine



A 5-inch F-M Stock Pump with 20 hp. F-M Motor handling stock for No. 4 machine. Four of these pumps were installed because of the remarkable performance of the first installation.



The East Millinocket Plant of the Great Northern Paper Co.

--then in an emergency it took on No. 2 Machine and supplied both of them

A nationally known paper mill installed a 5-inch Fairbanks-Morse Stock Pump direct connected to a 25 hp. motor. Its job was to lift 3 per cent stock from a suction chest to an elevated chest from which the stock flowed by gravity to No. 1 Machine. A wier type overflow returns surplus from the upper to the lower chest.

Alongside of the F-M Stock Pump was the usual type centrifugal pump designed for high efficiency, equipped with shrouds and driven by a 20 hp. motor. This pump lifted stock of the same description to the chest serving No. 2 Machine.

The first basis of comparison was established when the F-M Stock Pump demonstrated such unusual efficiency that the discharge valve had to be closed to less than 2/3 full opening. At the end of the first week of operation an inspection showed the F-M Stock Pump did not require the usual washing out. Meanwhile the shrouds from the centrifugal pump had to be removed to prevent clogging.

One day the stock chest on the suction side became low, the solution increased in density and the centrifugal pump clogged twice in the same day. *The discharge of the F-M Stock Pump was hurriedly piped to No. 2 Machine and the pump successfully handled sufficient stock for both machines.* A 25 hp. motor thus doing the work of two 20 hp. motors.

If you are interested in solving this toughest of pumping problems—stock pumping—write for full information.

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In the ordinary machine, the various mechanisms are assembled and secured together in fixed and inflexible relationship by rigid bonds such as screws, bolts, tie rods and the like. Let one of the bonds give way or become loose and the machine is endangered.

As in the ordinary machine, the mechanism of **organization** must also be secured together in the proper relationship to each other and to the machine as a whole. But in this case the bonds cannot be inflexible and rigid. The very nature of the machine itself demands their utmost flexibility, otherwise the machine will not function.

In the organization machine these bonds, although abstract in nature, intangible and invisible, are all-powerful. They bind effectively, yet when abnormal pressure is applied, their inherent elasticity causes them to give sufficiently to enable the machine to successfully meet this increased pressure, generally brought about by changing conditions or sudden and unlooked for emergencies.

These bonds are not mysterious, not unknown,—they are present everywhere, wherever human activities exist, although not always properly recognized and utilized. Without them successful **organization** is impossible. With them **organization** will be an assured success. These bonds are **co-operation, co-ordination, common sense, justice,** and a **practical knowledge of the limitations and possibilities of the human factor.**

Like any other machine, the Organization machine cannot and will not function properly unless it is in the hands of a competent operator. Unlike any other machine, the power to drive it comes from no outside source,—it is latent within itself, waiting to be turned on, controlled and directed by the operator.

And the operator must know his business, he must know his machine from one end to the other, its limitations, the relative strengths and weaknesses of the various parts, its capacity for standing up under any conditions which may be imposed upon it, and how to adjust and repair in case lost motion or defects develop.

"Who or what is this operator?" you may ask. Who else but skillful and judicial **management,** without whose guidance and control **organization** can never be expected to operate successfully.

Summarizing then, we find the following five outstanding facts true of any industry:

(a) **Organization** is the Industrial Machine used for turning out the product
(b) **Management** is the skillful operator,—the directing and guiding influence for the Industrial Machine
(c) The **Tools** used by the machine are—
  (a) Policies and Plans
  (b) Plant, Machinery and Equipment
  (c) Operating and Processing Methods and Systems
(d) The substances upon which the tools are used and which are shaped, transformed and controlled by these tools are the three elements,—
  (1) Materials
  (2) Time
  (3) Expense
(e) The ultimate products sought for are, Harmonious, Co-Operative and Co-Ordinated Operation, Profits and Success.

The three elements, materials, time, and expense are ever present waiting to be transformed into the final products desired and required by every industry. This transformation can take place only when the proper tools, used in a properly designed machine, and controlled by a skillful operator are intelligently made use of.

The Fundamental Consideration

In attacking any problems of organization or re-organization, it must at all times be borne in mind that a successful solution, to be productive of desired results, depends largely, if not entirely, upon the thoroughness with which all phases of the various factors, directly or indirectly relating to the problem, are analyzed and acted upon.

The data necessary for studying the problem from all of its angles should be collected with care and with the definite object in view of amassing the information in such a form and in such sequence as to make it possible to readily visualize existing conditions, suggest sensibly and understandingly, and put into actual effect methods whereby existing malpractice can and will be eliminated, and correct procedure, with its concurrent benefits, established.

What It Is

Organization is a systematic combination of inter-related functions which work together for a common end,—or expressing it otherwise,—the arrangement or structure of parts by which a combination of functions is prepared to promote systematic co-operation.

It is therefore seen that an organization is capable of action, consequently there must be certain very definite functions which it must perform.

Its Major Functions

There are a multitude of functions which are performed by any organization and its various parts. These many functions, or rather sub-functions as we might call them, may all be distributed to four major fundamental groups.

The four major groups of functions of which an organization is composed are:

(a) The Corporate Group
(b) The Executive or Management Group
(c) The Line or Operating Group
(d) The Staff Group

The Corporate Group plans and guides the destinies of the organization. It includes the stockholders, board of directors, president, vice-president, secretary, treasurer and other corporate executives required by law.

The Management Group is governed by the Corporate Group and is represented by the general manager and his corps of specialists, as many and of such nature and capabilities as the magnitude of the business may require.

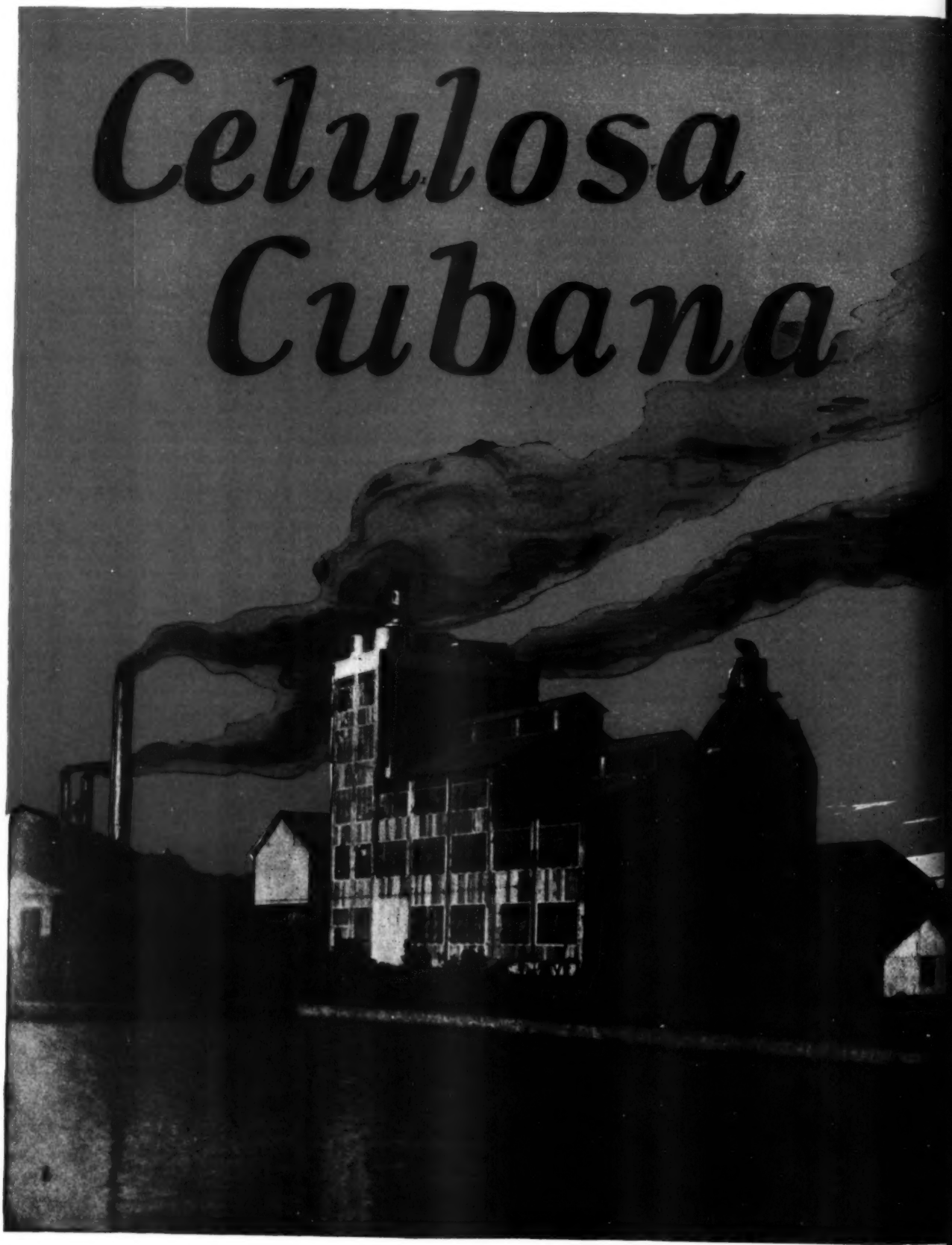
The Line or Operating Group is governed by the Management Group through the general manager. It is very broad in its scope, covering as it does all of the remaining divisions, departments, sections and branches of the business. It is the group which actually accomplishes all the work entailed in actual administration, manufacture and distribution.

As a matter of fact, the proper operation of this particular group necessitates a very definite dividing and subdividing of the organization into various parts, each one of which shall have very definite and necessary functions and duties to perform, these parts to be so arranged and coordinated as to function effectively and without friction.

Owing to the extensiveness of the Line or Operating Group and the multitude of sub-functions and duties falling thereunder, a very definite classification of functions is ordinarily made under three major divisions. These divisions are so logical and their reason for being so obvious that no explanation as to their justifiability is necessary. They are:

(a) **The Administrative Division** controlled by an executive generally known as the director of administration or general office manager and reporting to the general manager. Under this division are grouped general, cost and material accounting, credits, collections, traffic and similar functions.
(b) **The Manufacturing Division** controlled by an executive generally known as the director of manufacturing or factory manager and reporting to the general manager. Under this division are grouped purchasing, industrial relations, employment, salvage, production, production control, inspection, laboratory and research, experimental, power, engineering, maintenance, stores and warehouses, receiving and shipping.
(c) **The Distribution Division** controlled by an executive known as the director of distribution or sales manager and reporting to the general manager. Under this division is grouped advertising, sales promotion and sales.

The Staff Group which is the fourth of the major fundamental groups, studies, analyzes and formulates methods for enabling the Line or Operating Group to better perform its duties. It furnishes the executive or management group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with this information, which has been obtained largely through the close relationship between the Line and Staff, so that the Management Group may more effectively direct the accomplishments of the Line or Operating Group.

To further clarify the duties of the staff group, we may say that—

(a) It designates the results which should be accomplished.
(b) It determines the best ways and means of accomplishing these results.
(c) It formulates and outlines the methods to be used.
(d) It formulates and outlines the exact duties necessary in order that these methods may be carried out as directed.

In order that the Line and Staff may be properly co-ordinated for the purpose of producing the greatest results, and furnishing the Management Group with the best material with which to direct, in other words, to insure the concentrating and bringing together of the best brains of the business, it is best to introduce certain media between the Line and Staff which can act as referees, and the most satisfactory media have been found to be committees or conferences.

These committees or conferences should be established with the following prime objects in view:—

(a) To obtain the concensus of opinion of those who are best qualified to know the most about any given subject.
(b) To assemble department heads for the purpose of considering matters common to all so that methods may be determined which combine the requirements and welfare of all departments concerned.
(c) To submit to the staff all problems requiring more attention than the line is equipped for or has the time to give.
(d) To consider staff formulation.

Principles and Laws Governing Organization

It has been stated that in the building up of a new or the re-construction of an existing organization we must always bear in mind that every organization should consist of four major fundamental groups of functions, as heretofore described, to which all the many sub-functions are distributed.

It has been pointed out that of these four major groups, one—the Line or Operating Group, is generally divided into three major divisions, under which are classified the many sub-functions and duties peculiar to the operating group.

Now, if in the building up of an organization, the various steps are undertaken without due regard for certain recognized principles and laws governing organization, the results will be anything but what they should be, and should an organization be reared in ignorance of or utter disregard for these several fundamental principles and laws, chaos and failure will be quite likely to follow.

At this point, and for purposes of clarification, we may define a "principle to be a fundamental truth which is the basis for action and conduct," and a law "to be a rule for action and conduct not variable under given conditions."

The principles and laws governing organization are largely axiomatic in nature and a consideration of these principles and laws will reveal the fact that they are so vital that no proof is needed to establish their reason for existence and necessity for application.

The Principles are as follows:

(a) **Analysis**—which consists of separating a problem or an entity of any description into its elements for the purpose of closely studying each element, its functions, its relation to other elements, and its weaknesses. As a result of these studies it becomes possible to make sensible deductions to be ued as a definite and dependable guide in the process of proper and effective construction or re-construction.

(b) **Co-Ordination**—which consists of developing a business machine in which the basic determinations of the analysis enable all the parts to be so arranged as to properly and effectively perform their particular functions, thereby insuring the proper accomplishment of what is to be done.

(c) **Records**—which consists of compiling and properly classifying all available information and data as to past performances and associated subjects, so that the same may be used as a guide in the business machine in reaching the correct conclusions as to the carrying out of the work.

(d) **Planning**—which consists of co-ordinating and arranging all details and functions so that the work to be done can be done effectively, expeditiously, efficiently and economically.

(e) **Standardization**—Which consists of determining how to do work in the one best way, and then adopting definite standard practice instructions for the doing of the work.

(f) **Incentives**—which consists of recognizing the fact that the contentment, prosperity and progress of the individual must be promoted if the desired results and success are to be attained.

The so-called laws are as follows:

(a) **Objective**—A definite plan based upon careful preliminary analysis should be worked out.

(b) **Concentration**—Each department or division of an organization should be so arranged as to contain all the factors necessary for effecting the performances of only its own functions. If so handled, the department or division head can be held strictly responsible for the operation of his department.

(c) **Individualizing Responsibility and Authority**—Definite responsibility and commensurate authority should be allocated to each individual entering an organization. Each individual should be definitely informed as to whom he is to be responsible, as to who is to be responsible to him, and as to just what he is to be held responsible for.

(d) **Mental Capacity of Individuals**—In reconstructing an existing organization, or in building up a new one, division should be made as to the degree of knowledge and ability which will be required of those individuals who are to direct, as well as those who are to actually carry out the work.

(e) **Specialization**—Individuals should be trained to work in a limited field of knowledge, thereby becoming specialists and knowing their particular work very well. Executive positions are not difficult to fill and be administered by the man of average executive ability if the organization is composed of specialists.

(f) **Executive Freedom from Burdensome Details**—An executive should be held responsible only for total proven results and not for the mass of details or methods which must be used to secure these results. He should be allowed the greatest possible latitude as to the means to be used in producing results, consistent with correct company policy. The throttling of ability and initiative with burdensome masses of routine detail which should be done by clerks, has been and still continues to be in many organizations, a very rapid and effective manner of killing an executive's worth to his company and to himself as well. Smothered initiative and enthusiasm are difficult and in many cases impossible to resuscitate.

(g) **Understudies**—Each executive or supervisory position, should be provided with and protected by an understudy capable immediately of stepping into his superior's place, and effectively and efficiently administering his functions if needs be. No organization or co-ordination of departments or functions can hope to successfully survive if this necessity is not fully recognized and strictly adhered to.

(h) **Functional Co-Ordination**—Individuals should be taught to fully appreciate the difficulties which confront others with whom their work and functions

nine

factors that make the ideal beating engine

Opinions differ as to what constitutes a good beater. Old timers, who have grown old with their beaters, quite naturally believe that their particular equipment is entirely satisfactory, even though this belief may be based solely upon one single good characteristic.

In the ideal beating engine there are combined nine important characteristics. It should have large stock capacity, fast travel, uniform beating, rapid hydration, low power consumption, positive circulation, self-dumping, fine workmanship, and perfect installation.

You are positively assured of each of these important beater characteristics in the Mid-West Hi-Speed Beater. Write today for complete details.

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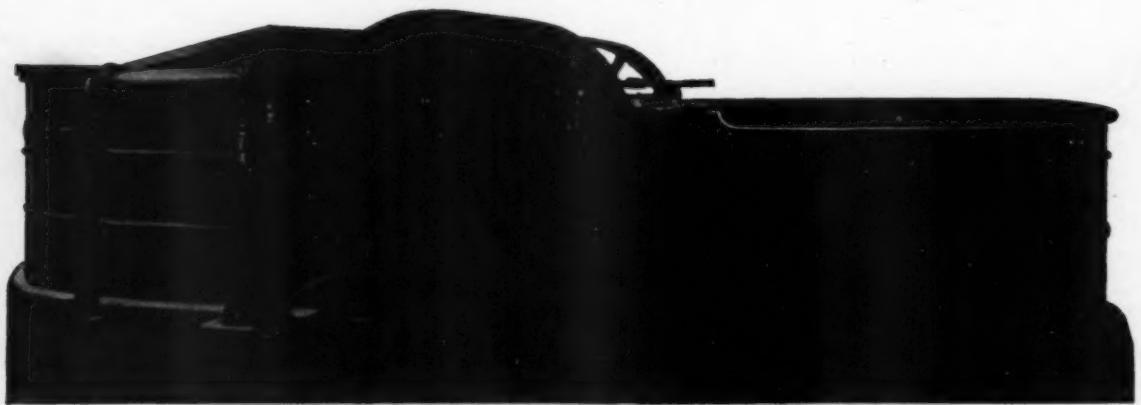

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are directly related, and should co-operate to insure the best results to all concerned and to the ultimate welfare of the organization as a whole.

(i) **Functional Relationships**—When an individual is engaged to perform definite work, the nature of his work should be made known to all with whom he will come in contact, in order that he may be held responsible for results. His relations to others, of others to him, his functions, and duties in carrying out these functions, should be so definitely specified and defined as to leave no grounds for misunderstanding and so that he may be enabled to work efficiently and effectively.

(j) **Co-Ordinating the Individual with the Job**—Individuals for any work should be engaged with a full knowledge of what is really wanted and the requirements to be filled. A definite knowledge of qualifications and requirements is absolutely essential in order that the right positions or jobs may be filled with the right individuals.

(k) **Standard Practice Instructions—Organization and Routine Charts**—An organization should have definite standard practice instructions as to all functions, duties, routines, processes and standards and understandable charts showing relationships, responsibilities and authority.

(l) **Committees and Conferences**—Committees should be established and conferences held so that all matters pertaining to the inter-relations of departments, functions and individuals can be handled to the satisfaction of all involved.

(m) **The Staff**—A body of individuals called the Staff under the leadership of an individual known as the chief of staff should be organized and put into operation. These staff members should, at all times, be kept free from routine duties, and able to devote their entire time to analyses of problems affecting the organization as such problems arise. The Staff should work through department managers, divisional superintendents and committees, reporting their findings and getting direct action. Copies of all Staff reports should go to the general manager and all matters, upon which there is a disagreement, should be taken up by the Staff with the general manager, and at the same time and in the same meeting, with the department manager or divisional superintendent involved.

(n) **Co-Operation**—(1) All departments and divisions should be bound together in such a manner that all are working to one common end, namely, the good of the organization. The personal and departmental ideal should be submerged in the one big ideal of working for and with each other with only the good of the organization as a whole in view.

(2) If there is any outstanding so-called law of organization that can claim first place as to importance it is that of co-operation.

(3) Unwillingness or inability to co-operate has been responsible for more personal and business failures than all other combined causes. No man knows it all, or even knows so much that he can at any time afford to think that he cannot learn something from every person he comes in contact with.

(4) The great trouble with some men who rise from the ranks to a position which gives them authority to direct the activities of a number of their fellow workers, is that they do not seem to be able to realize that with this authority which has been given to them they can construct or destroy, create loyalty or disloyalty, bring about a degree of co-operation which will create harmony, contentment and produce desired results, or else bring about a lack of co-operation which will create discord, discontent and disloyalty and produce nothing but difficulties and the failure of the individual who abused the authority which had been entrusted to him.

(5) The man who thinks he can gain anything by arrogance, autocratic domination, by being "hard-boiled," by refusing to give a civil intelligent answer to an honest, help seeking question, by resenting a well meaning, constructive and helpfully intended suggestion or criticism or by failing to properly play his part in the organization game, is fooling himself and he will be the greatest sufferer from his own wrong practices.

(6) It makes no difference what position a man holds, he is in his position because of certain qualifications which fit him for his job and he should never so far forget himself as to lose sight of the fact that he at one time was at the bottom of the ladder. As a matter of fact, the higher up any man goes the more frequently should he check himself and his thoughts so as to be sure that arrogance, egotism, injustice and the spirit of autocratic domination do not lay hold upon him, cause him to be tyrannical, unjust and unreasonable and thereby make him a despised individual instead of one who is honored and respected by his fellow workers and especially by those who hold less important and responsible jobs than he does.

(7) A man can and should be fair and honest at all times. If he would train himself to regulate all of his thoughts and intended actions with a spirit of open minded co-operation, his individual success, happiness and contentment would be much greater and his company would have fewer and less serious problems to contend with.

In the foregoing, no attempt has been made to discuss any of the details or specific methods ordinarily involved or employed in the application of a systematic organization plan to an industry. Fundamentals only have been covered because they apply to all applications. Detailed methods and arrangements of functions will vary with each individual combination of conditions to the extent that if we had before us two plants, identical in every physical respect as to grounds, buildings, product and number of employees, the application in one case would probably be very different from that in the other because of the variables which would be encountered in the human factor.

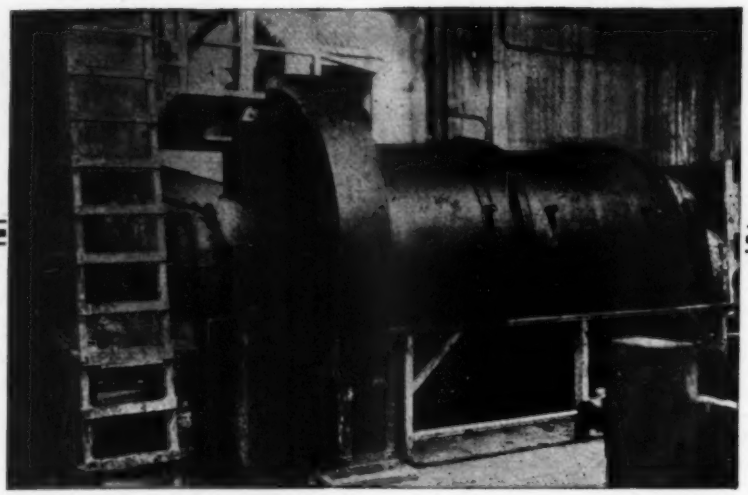
Individuals who have ever attacked the problem of organization in several plants have learned by experience that there is no "cut and dried" plan of organization applicable to all plants indiscriminately. Each case stands by itself as a separate and distinct problem which can be successfully solved only by painstaking analysis and the subsequent synthesis.

That systematic and scientific organization is a distinctly profitable investment cannot be successfully disputed. One need only to consider such institutions as the Bethlehem Steel Company, General Motors and a multitude of other nationally known, enviably successful concerns. These are all organized, and have been for years. How successful do you think they would have been without a definite practical working plan of organization whereby the functions, duties and activities of each individual were properly and clearly defined and responsibilities with commensurate authority properly allocated, definitely fixed and understood?

An industry without a definite organization plan to guide it is like a ship without a rudder—it is liable to go in any direction without warning—for control is absent.

Practical organization means a definite and effective control; it means that each executive and worker knows exactly where he stands, exactly what his duties and responsibilities are and exactly the extent of his authority; he knows that his status in the organization is definitely known and understood by others with whom he will come in contact during the performance of his work; he knows that if he fails to function properly that he cannot successfully shift responsibility to another and possibly to an innocent person; he knows that he must "play the game" openly and fairly.

Organization provides understudies for each executive and supervisory position; it provides standard practice written



The Marcy Mill in the Port Angeles, Washington, Mill of the Fiberboard Products, Inc.

Power Costs for Beating Reduced 50% —Can such a saving be ignored?

TOTAL up the power now being used in your present system for beating or refining.

How much is it?

Supposing you could reduce this power consumption by—say one half, to be conservative —would the saving be worthwhile?

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instructions covering all functions, duties, routines, processes and standards; it provides for the proper training and development of men; it creates and promotes among its people the growth of understanding, co-operation, harmony, contentment, respect for superiors and subordinates, and, last but not least, self-respect, self-confidence, initiative, loyalty and success.

Sanford B. Belden, vice president of The Jeffrey Manufacturing Co., died in New York City May 15, 1928. Mr. Belden was also a director of the company and was chairman of the board of directors of the British Jeffrey-Diamond Limited, the Jeffrey British plant located at Wakefield, England.

Paper Machines Make Record Run

It is considered that a record run by a papermaking machine was recently made on No. 1 machine in the plant of the Thunder Bay Paper Co., at Port Arthur, Ont. This machine, a Beloit, with removable fourdrinier, was started at nine o'clock on a Monday morning and ran continuously until 11:40 the following Wednesday evening. It did not stop, nor did a break in the paper take place. The paper as it left the machine was 209 inches wide, and the run off the machine in 62½ hours without a break was sufficient to fill twelve carloads, making a total of over 300 tons.

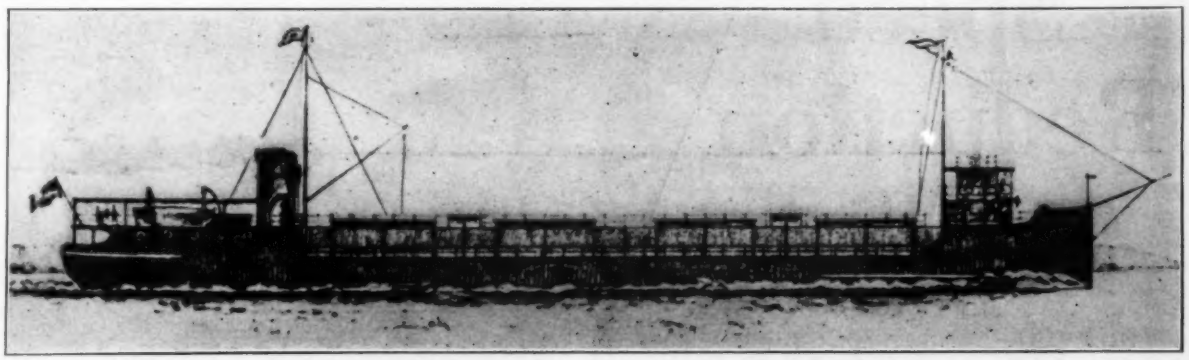
No. 2 Beloit machine in the same mill, also made a record production run of 116.9 tons the first day. During the first week the production averaged 110.46 tons per day, running at a speed of 800 feet per minute with 221 inch trim paper.

Tribune to Build Two Paper Boats

The accompanying illustration shows the design of oil burning ship, two of which, costing approximately $225,000 each, are to be constructed by The Chicago Tribune for carrying paper from its mill at Thorold, Ont., to Chicago. These boats will be built to carry 2400 tons each, and are of unique design, being built much higher than the ordinary lake-going vessel. An entire load can be carried under cover.

The Tribune has acquired a valuable dock at the mouth of the Chicago River, which is 450 ft. long, and on which is situated the old Canada Atlantic Transit Co. warehouse. A modern warehouse will be erected, and loading and unloading machinery of special design will be installed. Special cranes for lifting newsprint paper from the hold of a steamer to the warehouse have already been built and demonstrated. These new devices were designed and built under the direction of Fred Van Der Horst, a foreman at the Tribune plant. The use of hand trucks is eliminated and the cranes are so constructed that rolls of paper can be lifted without being damaged. This is accomplished with about one-third of the number of men required under the old system.

Added to the two boats which now carry pulp from the woods at Shelter Bay on the St. Lawrence River to Thorold, this will give the Tribune a fleet of four boats. It is expected that the output of the Thorold mill will be later increased to 500 tons daily.



Important Forestry Enactment

President Signs McSweeney-McNary Forest Research Bill

THE pulp and paper industry regards the passage of the McSweeney-McNary Forest Research Bill as one of the most vitally important pieces of forest legislation which has been enacted. This bill, which was signed by the President on May 22, completes the program of fundamental national forest legislation, first outlined in the Snell bill proposed by the National Forestry Program Committee in 1920, and later bearing fruit in the General Land Exchange, the Clarke-McNary and McNary-Woodruff laws.

The National Forestry Program Committee, the sponsor of this bill, has expressed gratitude to the various organizations and individuals who co-operated in placing facts before Congress and the public. R. S. Kellogg, chairman of this committee, has since the inception of the bill labored untiringly for its enactment. He has briefly outlined the appropriations and authorizations specified in the following statement:

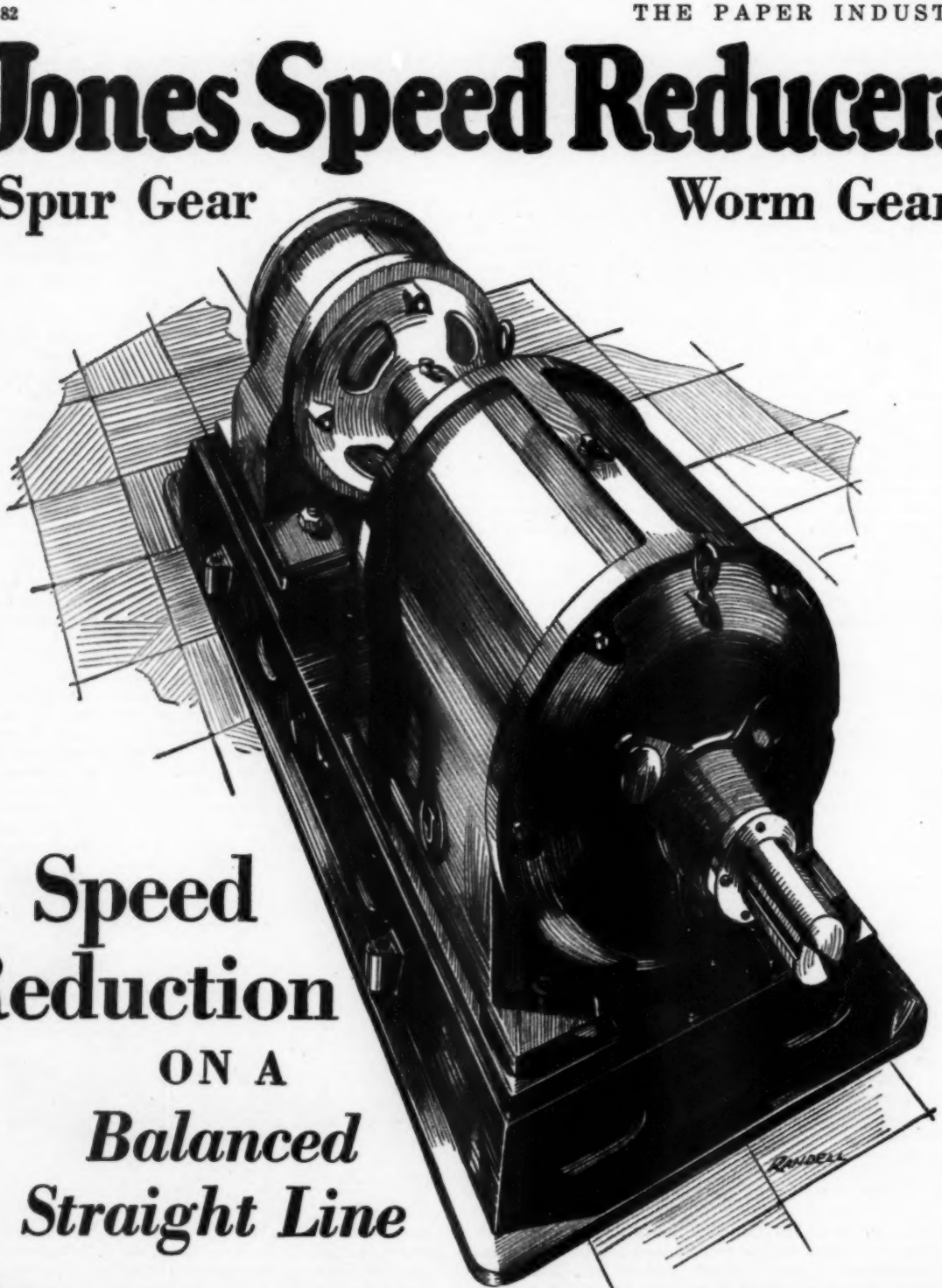
The McSweeney-McNary Forest Research bill is the capstone of many years' work in building the framework for an adequate Federal forestry policy. The new law is a fitting climax to a long series of acts by Congress, beginning with the authorization for Federal forest reserves in 1891, the establishment of the Forest Service and the transfer of the administration of the forest reserves to that organization in 1905, the Weeks act for the acquirement of lands for national forests through purchase in the eastern mountains in 1911, and the Clark-McNary act in 1924, which firmly established the House by Representative McSweeney of Ohio, and in the ernment with the states and timberland owners in the protection of our forests from their greatest enemy—fire.

The latest Federal forestry law went through Congress with unusual speed and lack of opposition. Introduced in the House by Representative McSweeney of Ohio and in the Senate by Senator McNary of Oregon, hearings were held by the respective Congressional Committees during the week of February 28, and the proposed legislation was also discussed at the same time with the President and the Director of the Budget. The bill passed the Senate on April 17 and the House on May 12, without a single vote being recorded against it in either body, which is sufficient testimony to the widespread public backing which the measure received from organizations and individuals throughout the country. With the signing of the bill by the President, there are now many years' work ahead in conducting the various lines of forest research which are necessary to the maintenance of timber production and the utilization of forest products in their varied forms and highest uses.

The McSweeney law provides in detail for a long-time program of fundamental forest research by five different Government bureaus. To the Forest Service is assigned the conduct of the Forest Experiment Stations (which are as essential to tree growing as agricultural experiment stations are to farming), forest range research and forest products. The present appropriations for these items total $881,800. The authorizations for them under the McSweeney law are $2,-

Jones Speed Reducers

Spur Gear Worm Gear



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275,000. If stepped up under the proposed ten-year program, this is equivalent to an annual increase of $139,320.

For investigations into the diseases of forest trees and the causes of decay and deterioration of forest products and the development of methods for their prevention and control, the Bureau of Plant Industry receives an authorization of $250,000 annually, as compared with the present appropriation of $98,500 for this purpose. On a ten-year basis this is equivalent to an annual increase of $15,150.

For the development of methods for the prevention and control of infestations of forest insects, of which the gipsy and browntail moths and the pinebark beetles are conspicuous examples, the Bureau of Entomology receives an annual authorization of $350,000, compared with the present appropriation of $174,570. According to the ten-year plan, this will amount to $17,543 annual increase.

For studies in the life histories and habits of forest animals, birds and wild life, the Biological Survey receives an annual authorization of $150,000, compared with the present appropriation of $10,000. An annual increase of $14,000 for ten years will be necessary to bring this item up to the authorized maximum.

For studies into the relationship of weather conditions to forest fires, leading to the possibility of forecasting forest fire dangers, the Weather Bureau receives an authorization of $50,000 yearly, compared with the present appropriation of $23,600.

In total, the present appropriations for these various items are $1,188,470. The authorizations for them carried in the McSweeney law are $3,075,000. In carrying out the suggested ten-year plan of gradual increases, in order to build up the work with maximum effectiveness, the additional annual appropriations for these purposes would be $188,653, which is a very moderate program.

Besides these specific annual authorizations, the new law carries two other items assigned to the Forest Service. One is a maximum annual appropriation of $250,000 for studies of the costs and returns and the possibility of profitable reforestation under different conditions in the different forest regions and for various other economic investigations of forest lands and forest products, in order to assist in the most effective distribution in the interests of both timber grower and timber user. The other item is a total authorization of $3,000,000, at the rate of not more than $250,000 annually for a comprehensive survey of the present and prospective requirements for timber and other forest products in the United States and of timber supplies, in order if possible to arrive at means of balancing the timber budget of the country. This work is to be carried out with the co-operation of the appropriate officials of each state, and also with the assistance of private and other agencies which may be able to help in the problem.

It may be easily judged that the most important parts of the new law are those which make provision for much larger appropriations for the Forest Experiment Stations and the forest products investigations. There are now eleven Forest Experiment Stations, whose fields are so sub-divided as to cover all the most important forest regions. One or two additional stations (including one in Hawaii) may be established under the new law, and with the long-time program of more adequate financial support now assured, it will become possible for the Government to build up and hold the scientific personnel required for research of this kind. The forest products investigations, carried on chiefly at the Forest Products Laboratory, operated at Madison, Wis., in co-operation with the University of Wisconsin, deal primarily with the determination of the properties of all our commercial woods, treatment by means of seasoning and preservative to prolong their life and usefulness, studies into the practical uses of the various woods, and the products which may be derived from them, and also studies of new and improved methods for the manufacture of pulp and paper from wood.

With the enactment of the McSweeney-McNary law, completing the program for general Federal forestry legislation, there is now reasonable basis for hope that the problem of our permanent timber supply is in the way of solution. There is still a long way to go, and this is even more true of some of the states than of Federal accomplishment, but we are headed in the right direction, which is more important than the rate of speed.

Heritage to Forest Products Laboratory Madison

The appointment of Clark C. Heritage to the position of Senior Chemical Engineer in charge of the Section of Pulp and Paper of the Forest Products Laboratory at Madison, Wis., succeeding John D. Rue, recently resigned, is announced by the Forest Service, U. S. Department of Agriculture.

Mr. Heritage brings to his new responsibilities wide industrial experience in directing development work, from laboratory research to sales extension of commercial products. After completing his technical training at the University of Chicago and the Armour Institute of Technology, Mr. Heritage entered the pulp and paper industry as chemical engineer with the Nekoosa-Edwards Paper Co. at Port Edwards, Wis. Under the direction of A. G. MacNaughton, he investigated the operating variables in wood preparation.

Mr. Heritage has been a member of the Technical Association of the Pulp and Paper Industry from its inception in 1915. He is a member of the American Institute of Chemical Engineers, having served for several years as committeeman on Chemical Engineering Education.

Printing Luncheon

That more effective co-operation between mill, merchant and printer would result in better satisfied printing customers and increased consumption of the grades of paper used by the printer, was the opinion expressed by E. F. Eilert, president of the Eilert Printing Company and John Clyde Oswald, managing director of The Employing Printers' Association, the speakers at the printing luncheon of the New York Division of the Salesmen's Association of the Paper Indutry. In discussing this problem of effective co-operation between the three factors in the printing paper field, the speakers made a number of concrete suggestions which were of great interest to the salesmen present and brought out an interesting discussion. S. C. Knode, vice president of the New York Division, is working on the personnel of a committee from his division to study the problem and report back in the near future on the most effective means of carrying out the recommendations of the speakers. The personnel of this committee will include salesmen handling all the grades in common use by the printing trade.

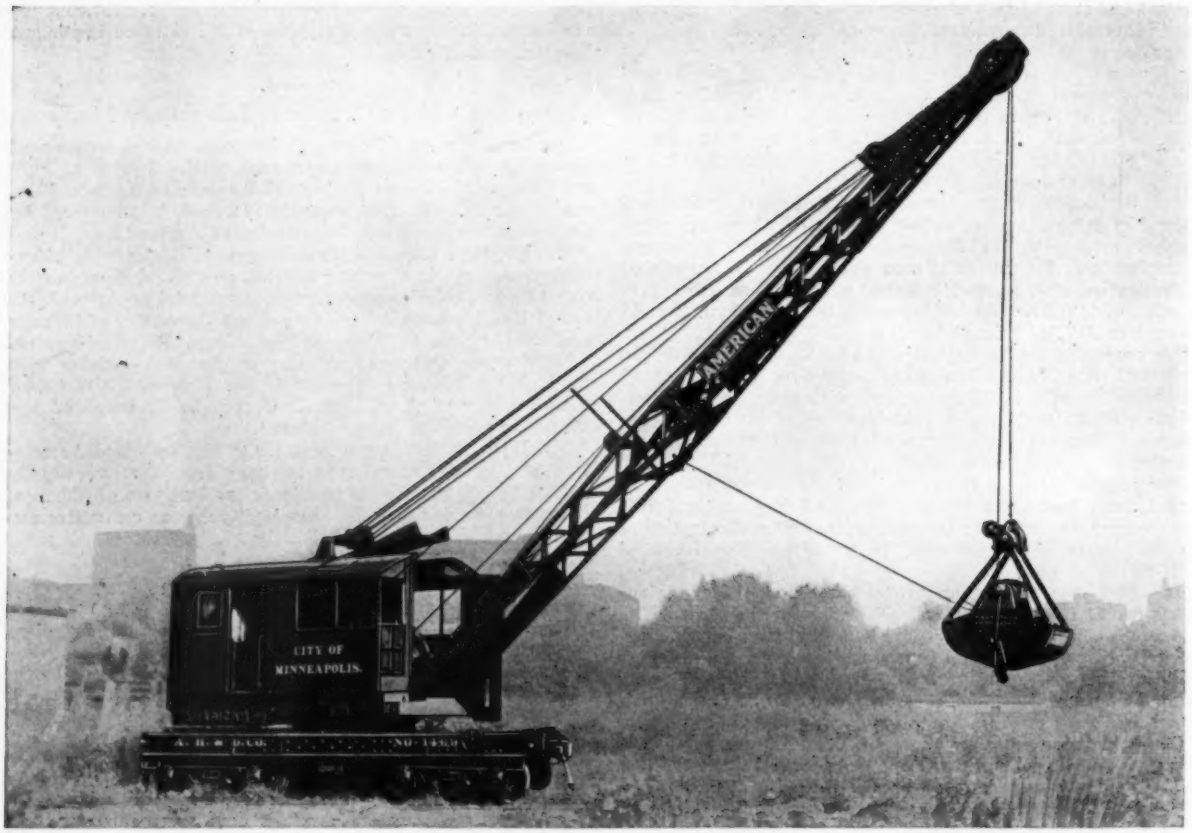
The speakers also emphasized the necessity for further standardization and simplification of printing papers and of printing ink and strongly endorsed the "thousand count" as a constructive step in this direction. Other topics covered were better service by both engraver and printer and the type of mill advertising most effective in stimulating the sale of printing paper. The speakers also gave an interesting description of the method used by the United Typothetae of America to educate the printer in the use of paper and ink suited to each other and to the particular requirements of each printing job.

Dr. E. O. Merchant presented and discussed briefly a chart showing the trend of Weekly Commodity Prices, according to four of the leading price indexes, commenting on the factors responsible for the recent upward trend in commodity prices.

Pusey and Jones Make Improvements

Since the reorganization a year ago, plans have been under way for general improvements throughout the plant of The Pusey and Jones Corporation, Wilmington, Del., with particular attention given to the paper mill machinery departments.

Several new buildings will replace obsolete structures, tools and machinery of high efficiency will be installed and the work routed in a straighter line than is possible with the existing layout. Fire hazards are being materially reduced, safety devices installed at all danger points and further provisions made for the comfort and convenience of the employees. The total cost of these improvements will be approximately $500,000.



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Automatic Control of Moisture in Paper Manufacture[1]

By PROF. J. G. CALLAN AND ALBERT ALLEN

IN MANUFACTURING paper, the control of the moisture content as delivered from the paper machine presents a problem that ever papermaker recognizes as both important and difficult. It affects both quality of product and manufacturing profit.

For any given kind of paper intended for a given use, there is one best moisture content. In most cases this will be close to the standard "regain"—that is, the moisture that the dry paper would take up, or wet paper would dry down to, if it were exposed a long time to average weather conditions at the place and time of use. There are exceptions to this rule. For example, newsprint requires for best printing characteristics somewhat more moisture than this. A paper that is too dry gives poorer printing qualities, and under various circumstances may give trouble from curling, cracking on fold, low strength, cockled edges, sticking on account of static electricity, and failure to register on color-printing or other repeated impressions. Too damp a paper shows some of these faults, as well as others, but in general a slight excess of moisture causes less trouble than equal deficiency. The range for best quality is narrow, and it is well understood that close moisture control is one of the important ways of keeping quality up to a high standard.

From the viewpoint of manufacturing profit the matter is equally important. A paper one or two percent deficient in moisture not only suffers in quality, but also shows light running weight, which leads to correction by increase of expensive stock, where more moisture at no cost would actually give a better product.

For the reasons discussed in the next section, it is more common to find the paper coming off the machine too dry than too wet—with resulting loss both in qualities valued by the customer, and in making cost of stock and steam.

Moisture Control and Tests at Present

The backtender has to estimate the moisture of the paper by its feel, the steam pressure, the appearance of his felts —and an occasional tear-out and weighing. The running observations depend entirely on skill and experience, and the estimates are very difficult to make accurately in any case, and particularly so if there are any changes of grade, weight, speed, atmospheric conditions or other circumstances. The tear-outs represent single conditions, not available for report until a considerable time later after the weighings have made; they do not show whether moisture is increasing or decreasing, and careful tests with long tear-outs show that there are considerable erratic variations even in a strip twenty feet long. On account of the loss of paper from a tear-out, not many can be made, and if the backtender thinks one non-representative, he very naturally trusts his judgment quite as much as the weighing. Further, since backtender and test man both understand the limitations of the tear-out method, less care is often exercised than might be possible in keeping the sample from moisture change before initial weighing; and moisture tests, which may be good to ½% in paper of 6% moisture under best conditions, are rarely reliable to better than 1% under mill conditions.

While paper a little too moist gives the user rather less trouble than paper a little too dry, the reverse is true for the papermakers. Dry paper handles better in reeling up and in the rewinders; damp paper may run damper in streaks, or in absence of immediate indication of its condition, it may run up in general moisture content, and run into wrinkles or blacken in the calender; and finally it is easier to hold fairly constant moisture at a low than at a high value, since the paper holds on to the last of its moisture with increasing tenacity, and the condition becomes increasingly stable if the backtender is allowed to "dry it right down" instead of "holding moisture".

For these reasons the average backtender plays safe, and dries his paper down, his feeling and experience being that this is the less of two evils from the operating standpoint. He has not had the printer's troubles that would teach him that it is the greater of the two from the user's viewpoint, and it is difficult to keep up the feeling that profits suffer from dry paper when he sees occurrence of broke from undue dampness and smooth running with a dry sheet.

The Need for Improvement

With no moisture indicator that is at once prompt, continuous, and exact, it is surprising that the backtender can hold moisture as well as he does, but experience shows that with the best control possible under present circumstances, if he keeps the paper dry enough so that it only rarely runs into operating troubles due to moisture, it will average drier than best quality demands—with corresponding needless loss of stock, and direct loss of profit. Clearly a device accurately indicating and controlling moisture would be of great benefit, allowing the paper manufacturer to hold a steady moisture value higher than his present average, without danger of occasional excess, and giving the printer and converter a uniform product, easier to print and freer from static.

Radio and Moisture Control

Despite the great advances in radio telegraphy and telephony, there have so far been few applications of the same principles to commercial uses. The apparatus described here is one of the pioneer devices of this sort. In some respects the problem of commercial application is simpler than are those of communication—for example, the tuned receiving circuit of a radio set gets "from the air" an almost inconceivably small amount of energy, and has to amplify it without distortion, while the moisture measuring device can be fed any desirable amount of energy and therefore does not require the delicate amplifying elements that give most of the trouble experienced in radio circuits. On the other hand, the requirement for maintaining set conditions permanently without adjustment, the necessity of giving the same indication regardless of varying line voltage, and other factors necessary for the production of a sturdy shop instrument, have taxed the ingenuity of the inventor, and required a developmental period of many months. The working out of a radio type instrument for detecting, recording, and automatically correcting moisture variations in a moving web of paper or the like, was done by the Atlantic Precision Company, under the direction of the inventor, Mr. Albert Allen. The development was carried forward in its later stages on a news machine and a writing paper machine under strictly commercial conditions, and the apparatus was not offered until all the troubles developed in these mills had been cured.

Development from the Verigraph Weight-meter

This moisture-measuring apparatus is a development arising directly from the "Verigraph Weight-meter"—a device employing radio frequency currents and circuits of radio type, to measure the weight of moving webs of rubber and other materials through their effect in changing the capacity of a radio-frequency condenser as they pass through. The Verigraph has passed the initial stages of commercial development, especially in the rubber industry, and a great deal of factory experience has been gathered from its performance.

Mr. Allen undertook the development of an apparatus using the same general arrangement of circuits, adapted to recognize, record, and correct the moisture in paper. The principle of the invention will be explained briefly in the next section, but it may be said here that a degree of moisture sensitivity is easily obtainable that is much greater than commercial conditions require. The limit of control does not lie in the sensitiveness of the instrument, but in the possibilities of adjustment of a paper machine, as will be explained.

Example of Performance

One of these moisture controllers has been in use for about a year on a large fast-running newsprint machine in a mill of one of the largest newsprint manufacturers. Practically continuous test records have been available showing comparison between present and former operation on this machine, and results on this in comparison with a similar

[1]Read at the annual meeting of the American Pulp and Paper Mill Superintendents Association, Pittsfield, Mass., May 31, 1928.

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BASTROP, Louisiana "Gator-Hide Kraft" four big machines, and Dilts New Type Beating Engines.

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hand-controlled machine. The machine has been open to the supervision and observation of the makers, but has been run nearly all the time by employees of the paper company.

In newsprint a rather high moisture—8% or more—is best from the viewpoint of handling on the printing presses. If the paper contains too much moisture, it is likely to show streaks that blacken in the calenders. With good hand control of moisture, there will be a variation of about 3%, so average moisture is run around 7%, or a little less, to prevent or minimize the development of occasional blackened streaks. With the Verigraph automatic moisture control the average moisture ran a little over 8%, with practically no paper damp enough to show streaks. The variations were practically all within 1% total range. The saving of material, replaced by water with advantage to strength and printing qualities of the product, was about 1½%. The even moisture improved uniformity of the reels, and reduced the number of breaks. Variations of less than ¼ of 1% in the moisture was reliably indicated and recorded. The money value from a saving of stock of this amount can easily be calculated for any given a year from a large paper machine, varying with size of machine and value of the raw materials.

Principle of the Verigraph Moisture Control

While the Verigraph can be operated without knowing its principle, just as a watch can be read without knowing watchworks, there is not much difficulty in understanding all the factors involved if one has an ordinary acquaintance with radio sets. The following is a non-technical explanation for those who are interested in methods as well as results.

The first part of the description applies both to the weight meter and to the moisture-meter; the particular way of applying the principle to the measuring of moisture follows this.

The Verigraph consists in principle of two loosely coupled radio-frequency oscillatory circuits, a primary and a secondary, with an indicating or recording instrument responsive to relative tuning in the secondary, and means of relative tuning controlled by the thing to be measured. Expanding this definition—the primary circuit corresponds to a radio sending station in the same box with the secondary, which corresponds to a radio receiving station not quite tuned in, but tuned usually a little on the high-frequency, low capacity side, so that if it were receiving sound, a slight turning in of capacity by the knob would give a louder reception. It is not receiving sound, and the receiving instruments are not ear-phones or loud-speaker, but are sensitive thermo-ammeters which show the strength of reception by degree of deflection, which can be read, or can make a record, or can actuate controlling apparatus.

Now as to the way in which the moisture content of paper tunes the secondary circuit, and therefore procures a corresponding deflection of instrument:

A moisture sensitive ribbon of a particularly suitable material is so placed and shielded that it takes up a moisture content directly responsive to that of the paper and to nothing else. This ribbon changes its length with changes of its moisture content, becoming slightly longer with more moisture. It is anchored at one end, and attached at the other to the movable plate of a condenser which is connected into the secondary circuit of the Verigraph. Changes in moisture of the paper cause changes of length of the ribbon, and hence of tuning of this condenser, and thereby control the indication of the instrument in the secondary of the Verigraph circuits.

There is an adjusting condenser in parallel with the moisture controlled condenser, that can be used to set the mid-scale reading of the instrument at the moisture content that it is desired to hold, or to set mid-scale at a certain definite moisture if the instrument is to be used under conditions requiring a definite scale, rather than a relative one. The sensitiveness—that is, the number of inches deflection of instrument needle for one percent change in moisture of paper—can be adjusted by changing the air-gap of the moisture-controlled condenser. It will be understood that these are essentially setting-up adjustments, made when the instrument is installed for the purpose of adapting it to the particular conditions under which it is to be operated. Afterward the aparatus holds its calibration well. There is no difficulty in adjusting sensitiveness to give full deflection for 1% moisture change, but usually it is better to use a less sensitive setting, particularly on recording and automatic forms, so that the usual movements shall be conveniently small for the record or adjusting motion.

Indicating Recording and Controlling

The Verigraph moisture apparatus can be furnished with instruments for indicating and recording moisture; but it is of far greater service when equipped not only with these, but also with automatic devices for controlling the moisture. The indicating and recording instrument will be described first, and afterward the controlling apparatus which is equipped with indicator and recorder.

An instrument giving nothing more than an indication is helpful, since it gives the backtender immediate and accurate information as to how his paper is running, but the standard equipment is an instrument which both indicates and records, thus leaving on a roll of paper a record of the run that can be read at a glance, and filed if desired. An interesting and valuable property of the Verigraph is the fact that it gives a running average reading. The instrument can be set by the maker to give any desired degree of "damping" or slowness of needle movement. If the needle were not damped, the extreme sensitiveness of the instrument would cause it to jump about, following the small erratic changes of moisture in the sheet. With its actual setting it takes up a position representing an average of something like fifty feet of paper. This expresses the matter rather crudely, since the paper just passing always has a little the most effect, and the longer ago the paper passed, the less its effect, but the "moving average" that is recorded can be shown to be a proper indication, and it is not thrown off, as a short tear-out may be, by local damp or dry spots. The calibration for the particular paper machine is established at the time when the apparatus is put in, by check with repeated long tear-outs weighed under best conditions.

The most important advantage of using as a guide the continuous record rather than an indicating instrument, is that any changes that the backtender makes are based on the trend, as well as the present value of the moisture content. The paper might be "on the dry side", but showing a progressive rise of moisture, and the backtender might rightly conclude that it would become normal shortly if let alone. He is working much less in the dark than if he knows only how the paper stands at the moment.

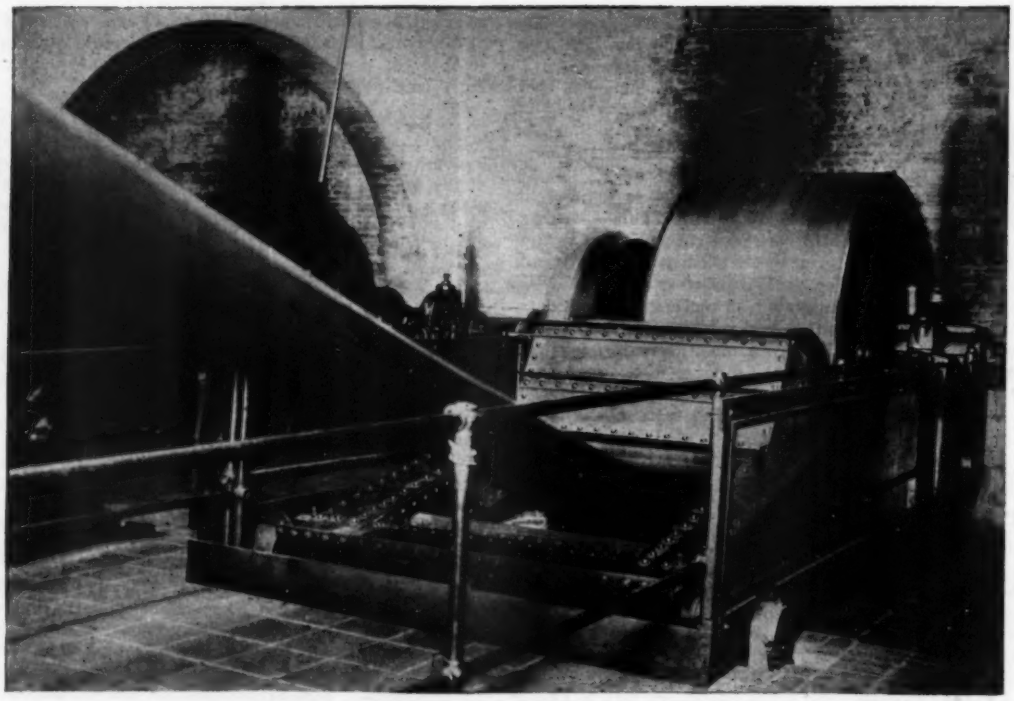
The Automatic Moisture Control

The instrument is provided with electrical contacts that are closed by the needle whenever the moisture goes high or low, and connects these so that they will open an electrically actuated steam valve by a measured amount when the low-moisture contact is made, and close it by such an amount when the high one contracts. The recorder makes a contact every fifteen seconds for marking the record, and this contact can be connected to work the valve, and adjusted to stay on for such time as desired—say from four to nine seconds. The longer it stays on, the more the movement of the valve. Unfortunately, so simple an arrangement as this works badly. It overruns and gives recurrent swings above and below normal, and does some other objectional things.

The real requirement is not nearly so simple as this. The main disturbing factor lies in the fact that it takes time for the dryers to heat up or cool down, and time for the paper to come through them to the measuring point. The machine must therefore have some properties that correspond to the back tender's judgment about these factors. This is provided by the two mechanisms constituting what is known as the corrective follow-up. These include a device which causes the valve to open or close by an amount determined by how far off normal the moisture actually is, and a timing device set to synchronize with the actual lag in heating or cooling of the dryers on the particular machine, and to bring the valve back to a point where the feed of steam will just hold the paper at normal moisture unless something new happens to disturb it.

Controlling Time Lag

Working out this corrective follow-up so that it met all the varying rates and amounts of moisture change that may occur from a variety of causes on a large news machine,



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proved a formidable task. It has been accomplished with such degree of success that long runs show control within a total range of 1%, with runs of many hours holding considerably closer than this. It would require a diagram to give a full explanation of its action, but the form finally settled upon is of substantial and relatively simple construction and is free from operating troubles.

Problems Differ

The adjustment of the Verigraph to meet the moisture control requirements of a given machine working on a given range of grades, constitutes an individual problem. It is always based on the same principles, but these are conditioned and modified by the constants and circumstances of the case. The adjustments are made at the time of installation from a series of observations on the machine to be governed.

Summary

To sum up, this apparatus will give a "moving average" indication of the moisture, of the paper passing it. It will give an immediately available record of the paper that has been passing, so that the backtender can see not only how moist the paper is, but whether it is getting moister or dryer. It will control automatically the drying of the paper within considerably narrower limits than it can be controlled by hand.

The Atlantic Precision Instrument Company will be glad to have its paper-mill engineers help you solve your drying problem.

Oliver Save-Alls Make Good Record

At a recent meeting of the Miami Valley Division of the American Pulp and Paper Mill Superintendents Association, held in the Anthony Wayne Hotel, Hamilton, Ohio, Mr. H. A. Morrison of the Oliver Continuous Filter Company, gave some interesting data in an address covering the subject of the Oliver Filter and outlining its numerous applications.

Describing its use as a save-all, Mr. Morrison presented the following figures giving typical Oliver performances on white water at several representative mills on various kinds of production, having been taken from actual installations and representing regular Oliver yearly averages.

OLIVER SAVE-ALL DATA

Grade Paper Made	Size Paper Machine	Tons Paper per day	Furnish	Flow G.P.M.	White Water lbs./1000 gals. TO Oliver	FROM Oliver	Lbs. Saved per day
Tissue	156"	25	(25% G. W. (75% Sulph.	600	4.0	0.35	3024
Toweling	156"	50	100% Sul	600	2.0	0.25	1485
Kraft Bag	160"	50	100% kraft (15% Sul.	500	4.0	0.3	2664
Book	120"	20	(65% Soda (20% Clay	250	15	0.6	5184
Bond	136"	25	100% Sul.	800	3.5	0.3	2700
Box Board	126" 7 cyl.	100	Chip Stock	1500	4.0	0.9	6600
Cover Board	113" 5 cyl.	50	(Sulphite (75% G. W. (Clay	400	8.0	06.	4144
News	166"	70	(75% Sul. (25% G. W.	700	8.5	08.	7700
Butcher Manila	74"	18	(Sulphite 40% (G. W. 60%	450	7.0	0.6	3840
*News	164"	50	(35 T Sul. (3.5 T W.W.	1130	10.0	0.35	7000
Totals		458		6930			44341

*Sulphite Decker—Save-All

It is to be noted that the Olivers recover 22.17 tons of white water solids per day, which is all returned to the machines and used for production of merchantable paper without reduction of grade.

The stock recovered may be very conservatively valued at $30.00 per ton and amounts to 6600 tons, basis 300 working day year. The gross value of recovered stock is thus $198,000 per year.

The total installed cost of the ten Olivers is $82,500.

The fixed charges, interest and depreciation at 15 per cent, are $12,375 per year; the total operating costs, 300 working day year, are $15,000; therefore, the net yearly value of ten Olivers is $170,625, or more than twice the amount of installed cost.

Decker Installation at Spanish River Mill

At the beginning of this year, two groundwood filter deckers were put into operation at the Spanish River Pulp & Paper Company at their Sault Ste. Marie plant. The success obtained with them has aroused considerable interest and requests for more details as to the design and operating features.

When the Filtration Engineers Incorporated were first invited to figure on the installation at the Soo, the design department was set to work. They reported—"deckering is really clarification of the stock from a dilute consistency to a dischargeable deposit which is always denser than the 3 per cent consistency. Our standard design of compartmentized drum will eliminate the decker strap leakages and wear; our discharge by conveying cords lifting the cake from the filter screw will eliminate couch rolls, discharge showers, doctors or brushes, but strictest observance of the fundamental laws of hydraulics must be obtained if the flow of white water, rotative speed of filter, submergence of drum and initial resistance in filter screen shall be correct''.

The findings of the engineers have been substantiated in the practical operation of these units. Clarification of the thin consistency stock is the keynote of filter deckers. The solids in filter white water are a fraction of a pound per thousand gallons. The basis of this improvement is the fundamental of all filter clarification—the initial coating on the filter screen becomes the true filter medium insuring complete filtration of the fiber from the water. During filtration the accumulated fiber on the filter screen attains a consistency higher than the final desired three per cent. Any pronounced dewatering effect on the filter is therefore superflous and is the basis for the large proportion of the drum being submerged in the stock.

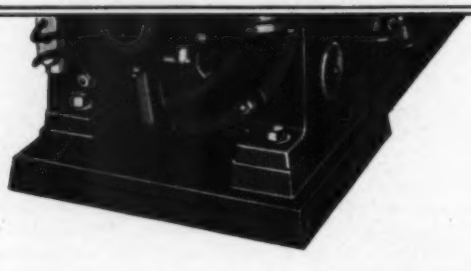
One of the most important points to be taken care of in the design in connection with paper work, is the adequate drainage line for the great quantity of effluent. On this type filter decker, adequate drainage was skillfully taken care of by a double valve. Each valve takes care of the white water of alternate compartments. Accordingly the valves could be made smaller and much easier to handle in erection and adjustment. With unrestricted drainage thus enabled, maximum capacity is assured and sluffing off of the pulp from the cylinder prevented. This sluffing off is usually a result of the backing up of the effluent, preventing an unrestricted passage of the water through the system.

Barometric legs are the source of a vacuum with a small vacuum pump to pull out the air and permit the legs to work at their maximum efficiency. The arrangement works admirably.

Method of Pulp Discharge—The most outstanding development in these units is the method of discharging the pulp. Couch roll discharge has not always proved satisfactory. There is a possibility of clogging the fine covering wire and of subjecting it to undue wear. Showers and brushes give fair results, but depend on their own continuity of operation for satisfactory discharge of the pulp.

In the discharge of the described deckers, the pad of pulp is lifted off the cylinder mold and conveyed in an endless sheet to the discharge roll, where the pulp peels off. This lifting off of the pulp is accomplished by running a series

-dependable power transmission-



How much will it save in your plant?

Cleveland worm gear speed reduction units save through reduced costs for maintenance, repairs, and replacements.

A further saving is made by insurance against breakdown delays—which may cost many times as much as the installation of a Cleveland drive. These items represent ultimate economy in plant operation and warrant careful consideration of drives with the high quality of the Cleveland speed reduction units.

Such savings are not effected by means of heavy machinery, increased space, or low efficiency. The Cleveland drive is well-proportioned, compact and efficient.

Cleveland worm gearing is the highest development of the industrial worm gear. It has been manufactured continuously for over fifteen years and thousands of successful installations have been made in American and Canadian plants.

Cleveland CWGC WORM GEAR REDUCTION UNITS

The complete line of standardized Cleveland Worm Gear Reduction Units is described in Bulletin No. 106. Standard units for horizontal or vertical shafts and for overhung loads, as well as double-reduction drives.

May we send you a copy?

CLEVELAND WORM & GEAR COMPANY

3270 EAST 80th STREET CLEVELAND, OHIO

"America's Pioneers in Efficient Worm Gearing"

of parallel cords around the cylinder. The pulp forms on top of these cords and lifts off as these cords are lifted away. The arrangement can be best visualized by considering a large pulley to be the cylinder mold and a small pulley to be the discharge roll, the belt being supplanted by the parallel cords. This discharge roll, about 8" in diameter, is run in ball bearings, in order to cut the wear on the cords to a minimum. These cords are ordinary fish line and have an extremely long life. This can be very well understood, when one considers the fact that they are doing no work and just merely idling around the cylinder mold.

The sheet as discharged, offers a very fine method of inspection and permits immediate discovery of poor screening and undue sliming in the system.

If it is desired to make lap storage in the plant, the sheet as it is discharged, can be run through press rolls. It is the means, therefore, of eliminating the wet machines, and at the same time, presenting a piece of equipment outstanding as a filter and flexible as to additional duties in the paper mills.

Adaptability for Save-All—The success established in deckering the groundwood warranted the construction of a paper machine save-all. In this work the same principles underlying the design for the groundwood deckers apply with two exceptions. The stock must be sweetened with a long fiber such as sulphite stock, paper machine broke, etc. in order that the fine flour in the white water will be retained in the mat on the cylinder mold and that a porosity will be maintained to insure the filtrate necessary to make a filter-save-all economic. Secondly, the capacity in white water filtrate being more than double that in the filter deckers drainage and valves are increased. Where the machine white water is slightly acid, the materials of construction must be rustless and prevent any discoloration of the returned stock caught from the white water.

The design for the white water save-all sweetening with sulphite stock contemplated a final white water containing less than ½ pound of stock per 1000 gallons.

NEW YORK CITY NEWS

To Form New I. P. Holding Company

Plans for the formation of a new holding company to be known as the International Power and Paper Company are nearing completion, according to reports here, and it is expected that common stockholders of the International Paper Company will be permitted to exchange their stock on a share for share basis. The new organization is being incorporated in Massachusetts as a voluntary holding company.

The new company will own stock of the International Paper Company, the New England Power Association, of which the International Paper Company is said to now own about 50 per cent, and other utilities in the United States and Canada controlled by the International Paper Company. Financing of the new holding company is expected to be made through the medium of common stock, which will be offered to shareholders in all the companies at a price below the market. Proceeds from the sale of this stock in the holding company will enable the International Paper Company to reduce its floating debt, coincident with an expension program.

The announcement has been issued from the headquarters of the American Paper and Pulp Association in this city that February 18 to 21, inclusive, have been chosen as the definite dates for the annual convention of that association in 1929. The convention will be held as usual in the Waldorf-Astoria Hotel in New York.

The Miller and Wright Paper Co., Inc., is now comfortably settled in its new home in the new Graphic Arts Centre Building at 200 Varick St., New York, where added facilities and increased room will enable it to serve the requirements of its clientele in a more advantageous manner than heretofore. The company is one of the oldest and best known paper merchandising concerns in Greater New York. It was established in 1895, and was located in the store at Duane and Elm streets for over 33 years before moving last month to its new quarters.

Rumors from very authoritative sources are to the effect that another big box board mill is projected for location somewhere in the East, and it is stated that the undertaking will comprise one of the largest concerns in the board manufacturing industry in this part of the country. Efforts to ascertain who is behind the project have been unavailing as yet, though it has been learned that interests representing large capital are planning the mill and that the capacity of the plant will be something like 200 tons of board per day. Moreover, it is said that chip, news and test board will be made, and it is understood that tentative plans provide for having the new mill ready for operation at about the end of this year.

The regular dividend of 6 per cent, payable in four quarterly installments of $1.50 on the 6 per cent preferred stock of the United Paperboard Co., Inc., whose main offices are in New York, was declared a few days ago. The first quarterly installment is payable on July 16 to stock of record July 2.

The International Paper Co. and subsidiaries report for the first quarter of this year a net profit of $1,657,438 after depreciation, interest and federal taxes, or $1.61 a share on the 7 per cent preferred stock of the company, as compared with a profit of $994,223 in the first quarter of 1927.

Announcement has been made that Ralph W. Collins is now associated with Marquardt, Blake & Decker, Inc., paper merchants of 155 Spring St., New York, in the capacity of general sales manager. Mr. Collins has had long experience in the paper industry, and formerly was connected with W. C. Hamilton & Sons and the Dill & Collins Co.

The Eastern Manufacturing Co., manufacturers of paper and pulp, has leased space in the tower of the new New York Central Building, now under construction at Park avenue and Forty-fifth and Forty-sixth St., New York, and will remove its local sales and executive offices to the new location when the building is ready for occupancy.

The Gilman Paper Co., now at 342 Madison avenue, New York, has leased new office quarters at 475 Fifth avenue in the Farmers Loan & Trust Company Building, and will move shortly to the new address.

The Japan Paper Co., importers of paper of 109 East Thirty-first street, New York, has filed notice of an increase in capitalization from $250,000 to $500,000.

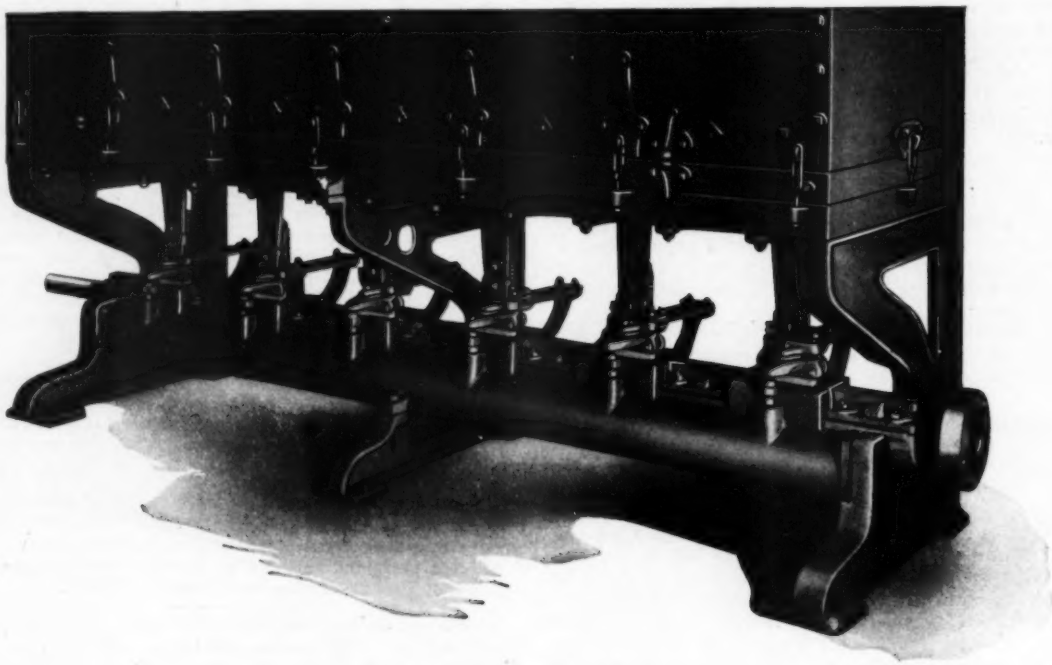
The Oxford Paper Co., paper manufacturers, is another concern in the paper trade of New York City which is planning to move its offices to the new New York Central Building, at Park avenue between Forty-fifth and Forty-sixth Sts. The company has leased space in the new structure, and will move from 200 Fifth Ave. as soon as the new quarters are ready.

The Missisquoi Pulp and Paper Co. has removed its New York offices from the Fifth Avenue Building, 200 Fifth Ave., to new and larger quarters in the Graybar Building, 420 Lexington avenue. E. W. Manse is the New York representative of this organization.

Peter Stryker Servis

Peter Stryker Servis, who for 40 years was sales manager for D. S. Walton & Company, paper merchants and mill agents of this city, died at his home in Elizabeth, N. J., on May 18.

Mr. Servis had been connected with the Walton firm for over 50 years, and had a wide acquaintance in the trade, having many friends whose respect and loyalty testified to his high character and reputation for square dealing. Mr. Servis was active in Building and Loan circles in Elizabeth. He leaves a widow, a son, Walter W. Servis, and a daughter who is the wife of Lieutenant Commander Arthur S. Dysart.



The Appleton Flat Screen

Solidly Built

for longer life

Long life is built into the Appleton Flat Screen. Careful consideration has been given to details that make for rigidity and stability as well as for accuracy and efficiency in operation. The top frame is built of cast iron and provided with flanged outlets to which the flow box is securely bolted. This gives greater strength and longer life than is possible in the ordinary screen with the top frame constructed entirely of wood. Ring-oil bearings and cam pockets are cast directly in the girt and will not loosen as the machine endures continual use. This factor, together with the use of a strong center support on the 12 and 14-plate screens, and of two center supports on the 16 plate screens, add to the rigidity, efficiency and long life of the Appleton Screen.

Descriptive folder sent on request.

THE APPLETON MACHINE COMPANY

Appleton, Wisconsin

The Month at Washington

THE Initial doings of the 70th Congress have passed into history for the summer, as the short session which opens next December will continue the sessions to March 3rd, with pending bills retaining their status during the adjournment. While Congress took its vacation a little earlier than usual, influenced no doubt by the political conventions, in the last minute wind-up several important bills which hung fire during the entire six months that Congress has been in session, passed both houses and were sent to the President for his signature.

Among these bills was H. R. 12030, more popularly known as the postal bill, which provides for a reduction of rates estimated at sixteen million annually, restoring the one-cent post cards, providing for collect on delivery and the acceptance of business reply envelopes without prepayment of postage, and for the collection of one cent additional an ounce on first class matter when mailed with deficient postage. Second-class rates on advertising sections of publications, including catalogues and folders and booklets, are reduced. A minimum charge per piece is fixed on second class matter when there is more than 32 pieces to the pound. Postage rates on fourth-class matter to distant zones are reduced, and the bill provides for bulk pound rates on all third-class matter, with combined special handling and special delivery at reduced rates. Takes effect July 1, 1928.

The first bill to be introduced in the 70th Congress was virtually the last one out, H. R. 1, popularly known as the tax reduction bill, reducing the revenue by $222,495,000 annually. The administrative changes have stopped gaps through which many individuals and corporations have heretofore escaped taxation, and adjusts more fairly the tax and money saved to the taxpayers of the country. The present tax on corporations is 13½ per cent net income, except in the case of corporations of $25,000 or less, which have an exemption of $2,000 and pay on a difference between $2,000, and the net income. This exemption has been changed to $3,000 giving the small corporations an exemption in that amount on any income they may have below $25,000. The tax on corporations is now cut to 12 per cent from 13½, but the original provision for a graduated tax was eliminated from the final bill. This gives a total reduction in favor of corporations of $123,450,000. While business done in corporate form is not yet placed on an equal footing with individual and partnership business, Congress has pro-provision allows a deduction of one-fourth of the amount of the tax on the earned income of any individual or partnership business up to $20.000. The change is that the deduction shall extend to one-fourth of the tax on earned income up to $30,000, which is the only relief given to individuals or partnerships in the present bill. The automobile tax is entirely abolished, so that when you purchase a new automobile you will not be worried about the tax. Members of clubs whose annual dues are $25 a year or less, will pay no tax in the future. A splendid resume of 48 pages, giving the substance of the new bill, which determines all your federal tax matters for the future, may be had upon application to the Clerk of the House, asking for Calendar No. 987, report No. 960.

In the opening days of the session, Congressman Edward E. Browne of Wisconsin introduced a bill (H. R. 5488) to provide for the conduct of scientific investigations by the Forest Service to discover economically practical methods for disposing of the waste materials of pulp and paper mills without polluting streams. An identically similar bill had been introduced at the 69th Congress, toward the close of that session, but too late to have had any hearings on the bill. A month after introducing his first bill, Congressman Browne introduced another (H. R. 8561), practically the same as H. R. 5488, but spreading the appropriation of $75,000 to carry on this work over a much longer period of time. A hearing was had on the bill the latter part of February. It was then decided to incorporate it into the McSweeney Bill as an amendment. Col. Greeley, chief forester, informed the committee that although not specifically stated, the McSweeney Bill, as reported out, would give the Forest Products Laboratory the right to make these investigations and that they would be made. The McNary-McSweeney bill was passed and signed by the President May 23d (S. 3556) providing for forest research and a policy of reforestation. This bill is hailed by the Secretary of Agriculture as the most important piece of fundamental forestry legislation enacted since the Clarke-McNary law of 1924. The new bill establishes and outlines a 10-year program for forest research. All classes of forest research are contemplated by the bill, including investigations in growing, managing and utilizing timber and forest products, watershed protection, fire prevention, insects and disease. The bill was backed by a wide divergence of public interests, including the lumber and wood-using industries, such as the paper industry.

Air mail postage at 5c an ounce instead of 10c a half-ounce became effective with the passage and approval of H. R. 8337 by the President. The bill was designed to bring the volume of air-mail up to the capacity of the planes.

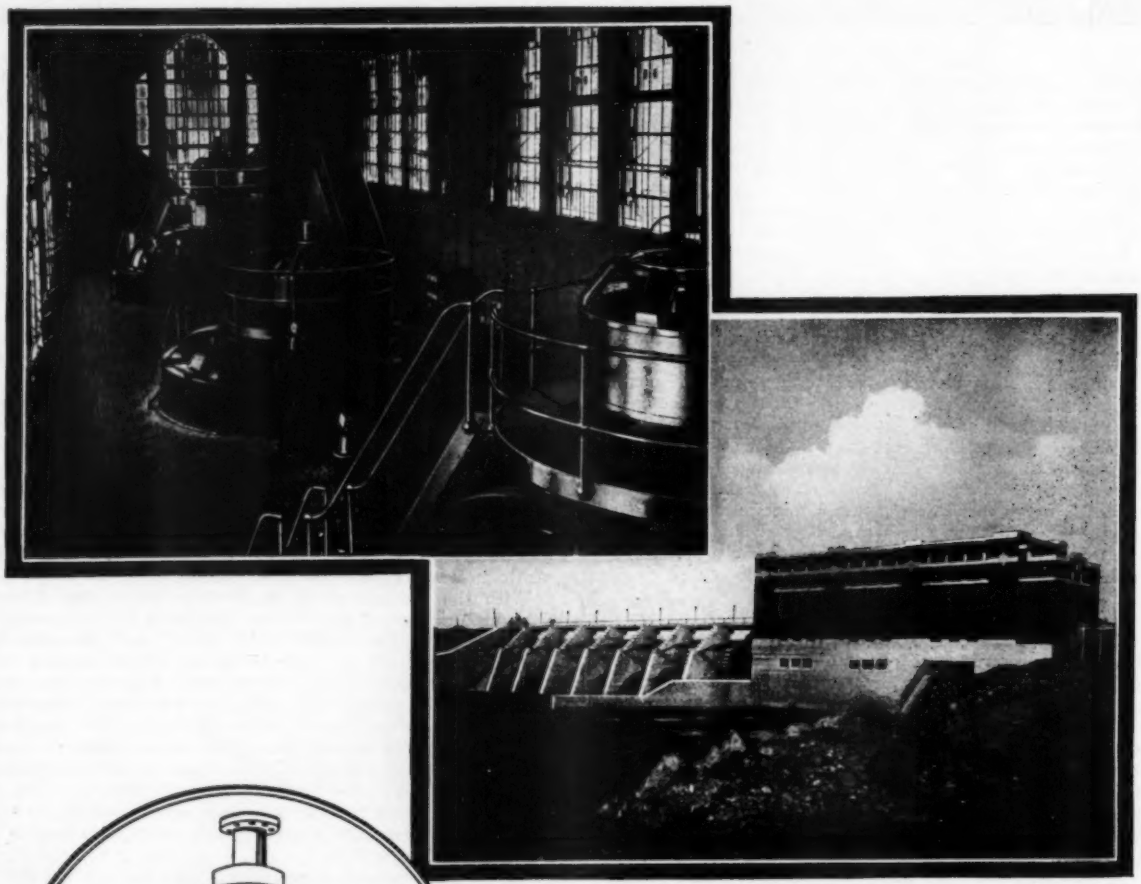
With the passage of H. R. 393 for taking the fifteenth decennial census of the United States, a provision was incorporated to also study "distribution," or collecting data regarding the sale of commodities by wholesale and retail mercantile establishments. When completed, this will present a composite picture of the wholesale and retail distribution of paper throughout the entire United States. This important field of statistical inquiry is a new departure, but is expected to be tremendously valuable to business interests throughout the country. The census will be taken in 1930 as of the first day of May, covering not only each state, but also Alaska, Hawaii and Porto Rico, Guam, Samoa, the Virgin Islands and the Panama Canal Zone.

The Senate passed a resolution (S. Res. 219) calling for an investigation into the causes of unemployment and possible relief therfor, with a view to framing legislation at the 71st Congress, which meets March 4, 1929. The report must be made on or before February 15, 1929, and must cover systems of public employment agencies; systems of unemployment insurance or other unemployment reserve funds; curtailed production and why, consolidation and economic reconstruction; public works to stabilize employment, and the feasibility of cooperating between Federal, state and private agencies.

The bill (S. 1482) introduced by Senator Shipstead for restrictions upon the powers of the Federal Courts to issue injunctions in labor disputes, met with such strenuous objection from all sources that a new bill was framed by the Senate Committee on the Judiciary and declaring the public policy of the U. S. as follows:

> "Whereas under prevailing economic conditions, developed with the aid of governmental authority for owners of property to organize in the corporate and other forms of ownership association, the individual unorganized worker is commonly helpless to exercise actual liberty of contract and to protect his freedom of labor, and thereby to obtain acceptable terms and conditions of employment,
>
> "Wherefore, it is necessary that he have full freedom of association, self-organization, and designation of representatives of his own choosing, to negotiate the terms and conditions of his employment, and that he shall be free from the interference, restraint, or co-

SMITH HYDRAULIC TURBINES



At the White Rapids Plant of the Northern Electric Co. maximum kilowatt hour production was obtained from a run-of-river plant by using unequal sized vertical reaction turbines. Two 3,820 h. p., and one 2,700 h. p. units operate under 26 ft. head and this power is transmitted to the Northern Paper Co. Mills at Green Bay, Wis., eighty miles away. Actual field tests show an efficiency of almost 94%.

Boston, 176 Federal St., Chicago, 33 S. Clark St.

S. MORGAN SMITH CO.—YORK, PA.

ercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other mutual aid or protection;

"Therefore, the following definitions of and limitations upon the jurisdiction and authority of the courts of the United States are hereby enacted."

The bill (H. R. 12898) to extend the collect-on-delivery to the policy laid down, shall be enforcible in court, and lists specific examples of the kinds of contracts. The bill specifices conditions under which injunctions may be issued in labor disputes, the restrictions including a showing of unlawful acts actually committeed and that substantial and irreparable injury will result to complainants unless an order is issued. A similar bill was introduced in the house (H. R. 759) by Congressman LaGuardia. This bill will, no doubt, be pushed when Congress reconvenes next December.

The bill (H.R. 12898) to extend the collect-on-delivery service and limits of indemnity to sealed domestic mail on which the first-class rate of postage is paid, was passed by the House on the last day of the session and sent to the Senate too late for action. The collect on delivery service is now applicable only to third and fourth class matter which is not required to be sealed. There is a widespread demand for the extension of this collect on delivery to such fourth-class matter as the senders desire to have sealed. Sealing automatically places it in first class mail, which prevents its being sent collect on delivery. If this bill is enacted it will permit senders of sealed matter to also have it registered for protection, as well as sent it collect-on-delivery. The C. O. D. service will thus be improved considerably over the present method.

The trade-mark bill (H. R. 13109, S. 4339) passed the House May 21st and action was pending in the Senate at adjournment. This requires the filing of a written application in the Patent Office with a copy of the intended trade-mark to be used in commerce and for its registration, and paying the sum of $10. An immoral, deceptive or scandalous mark is not permitted, nor one comprising a flag or a coat of arms of the U. S. or of any state, municipality or foreign country; of a portrait or signature of a living individual unless by his written consent; nor of the name, portrait or signature of any deceased President without the written consent of the widow; nor a mere descriptive or geographical meaning, etc. Registration of a mark shall be primafacie evidence of ownership. The patent office is to keep a register of all trade-marks. A registration certificate gives protection for 20 years. A renewal for a like period is permitted.

The copyright registration of designs amendment (H. R. 13453) is still in the hands of the Committee investigating the bill. A design is defined by the act as a pattern applied to, or a shape or form of, a manufactured product, or dies, molds, or devices by which such a pattern, shape or form may be produced, original in its application to or embodiment in such manufactured product, by reason of an artistic or intellectual effort, and which produces an artistic or ornamental effect or decoration. When used on a manufactured product the mark "Design Copyrighted" must appear, either in full form or abbreviated "D. copr.," or "D" inclosed within a circle. If the design is repeated as in wall paper or textiles, one marking is sufficient. The copyright protection extends for two years, with right to extend for a period of 18 years.

Recent Government Publications—"Paper and Paper Products in Canada" is the title of Trade Information Bulletin No. 549, available for distribution by the Department of Commerce.

"Decisions of the Patent Office and U. S. Courts in Patent and Trade Mark and Copyright Cases," 1927, is now available at the Patent Office.

"Bibliography on Foreman Training," being a selected and annotated list of references on recent books, pamphlets and magazine articles, is now available as Bulletin No. 128, Federal Board of Vocational Education (Trade and Industrial Series No. 35).

"Freight Commodity Statistics," Statement No. 281 (Fourth in the Series), has just been issued by the Interstate Commerce Commission.

Committee to Report—The Committee appointed by Secretary of Commerce, Herbert Hoover, to study recent economic changes, is about to make a report of progress on the work to date, which will be published in bulletin form next month. Shifts in employment, credit, etc., will be shown.

Credit Survey Gets Under Way—A nation-wide retail and wholesale credit survey, to begin immediately in Baltimore, is announced by the Department of Commerce, in conjunction with the National Retail Credit Association. Precise information on credit methods will not only help the consumer, but also better the financial balance of the tradesmen. Retail sales now approximate forty billion annually, and 60 per cent of this business is in credit form. No statistics are available on wholesale credits.

The Baltimore survey will serve as a preliminary test for other cities. Due to a serious lack of reliable credit information, many conclusions are being reached today which are false and dangerous. It is hoped to secure valuable statistics which will help to stabilize business.

The principal questions are based on 3 major subjects:

(1) Cash transactions;
(2) Open credit;
(3) Deferred or installment payments.

Other questions for inquiry cover the monthly balance, collections, bad debts, and the administration of credit. Proper credit manipulation not only assists the merchant to decrease his losses but enables him to pass on the resultant gains to the consumer in the form of lower prices.

The survey will go into losses sustained in credits by manufacturers, wholesalers, and retailers throughout the country, with a view to determining the facts as they exist today, and to see what can be done to remedy the credit situation so as to eliminate waste and inefficiency in credit transactions.

Weights and Measures Conference—The 21st National Conference on Weights and Measures met at the Bureau of Standards May 22-25 to consider methods for improving the weights and measures laws and procedure. Court decisions affecting weights and measures were discussed, and the relation of business men to public officials, state and federal. An attitude of neutrality upon the proposed adoption of the metric system was definitely stated as the Bureau of Standard's position. The principle of federal regulation of commercial weighing and measuring device types was reaffirmed by the Conference. Approval was given the bill (H. R. 7208) for improving the federal weights and measures laws. This bill specifies that weighing and measuring operations shall be performed in terms of standard units, but does not define them.

New Master Track Scale—The Bureau of Standards has just completed the first tests made on new master railroad track scale. The Bureau tests each master scale at least once a year. Two reports have just been issued on the subject. The new master scale depot of the Bureau is located at Chicago, the greatest railroad center in the world.

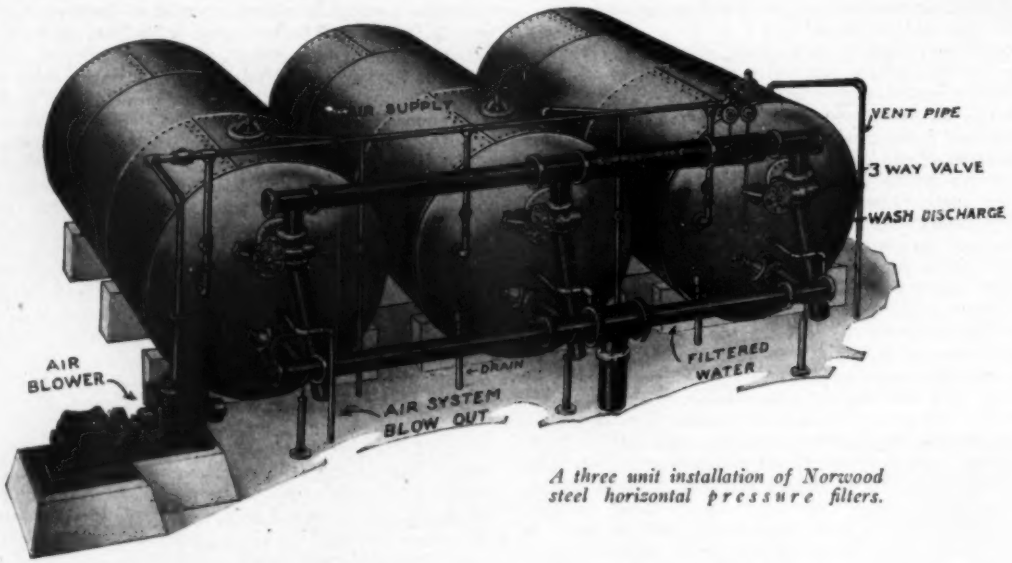
Fire Tests with Metal Shelving—As a means of obtaining information on the severity of fires in buildings, a number of burning-out tests have been made at the Bureau of Standards recently, and the results of the tests published in Technical News Bulletins. Metal shelving with partitions proved of particular value in preventing the spread of fire.

Trade-Mark Convention—The Pan American Trade-Mark Convention will meet in Washington Feb. 11, 1929, to formulate rules for the closer cooperation of South American and North American trade-mark practices, laws and regulations.

Recent Income Tax Rulings—In a recent decision of the Bureau of Internal Revenue (I. T. 2408), it was held that damage to one's motor car as the result of a collision may be deducted from gross income, provided the collision did not result from willful act of the taxpayer or the operator of his car.

Losses sustained in a storm which destroyed many distinctive trees and shrubs in the gardens of the taxpayer's home, are deductible for income tax purposes, according to a decision of the Federal Court (No. 3238), Sherman L. Whipple). The Internal Revenue Bureau had allowed only the expense of clearing up the debris.

The cost of automobiles for business use of officers of a company is invested capital, says the U. S. Board of Tax Appeals



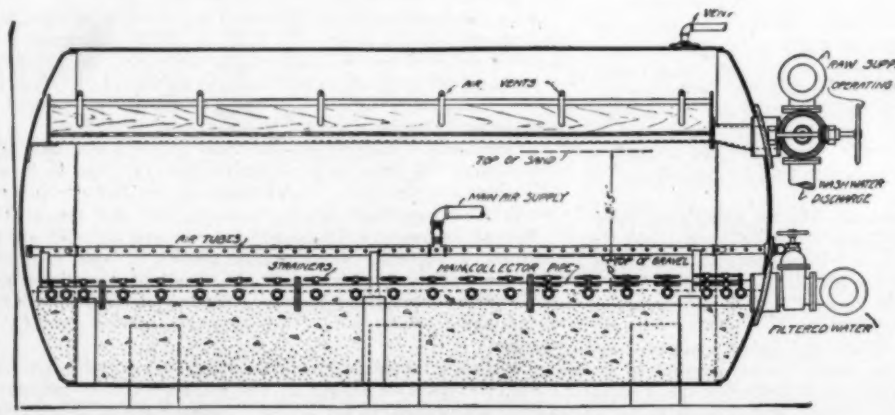
A three unit installation of Norwood steel horizontal pressure filters.

What Norwood Filters Will Do For You!

Save you money. Water can be taken from your river or stream—Norwood perfect filtration will remove pollution and foreign matter and with automatic chemical treatment will remove color and objectionable chemical content. Maintenance and operating costs are so low as to be negligible.

Improve your paper. Clean, pure, filtered water used in manufacture will improve the quality of your paper. Norwood filtration cuts down the proportion of "seconds," helps you maintain a constant standard of quality, and minimizes returns and rejections due to lowered quality and off color paper.

Help maintain continuous operation. No shut downs necessary during low water periods or freshets due to excessive dirt, leaves and other foreign matter in the water.



Cross section of a Norwood horizontal pressure filter. Notice the patented separate air wash system and strainer system used exclusively by Norwood.

Norwood Filters Assure Efficient Filtration

Norwood makes more industrial filter installations than all other filter companies combined. Norwood filters assure efficient filtration because the Norwood Engineering Co. has the engineering knowledge, skill and experience, as well as the plant, equipment and men to meet your filtration problems.

Ask for Catalogs

NORWOOD
ENGINEERING COMPANY
Florence, Mass.

in a recent decision (No. 9235), and the telephone expense at home is also deductible for officers of the company, where the company pays for the service.

A life annuity paid for title to property was held not deductible on the ground that payments are in the nature of rent and as a business expense in another decision (No. 10801).

Where a partnership operates on a fiscal year basis and the individual taxpayer files his income tax returns on a calendar year basis, the partnership losses are deductible nevertheless on the individual return, says the Board in another ruling (No. 13099, 13100).

Interstate Commerce Decisions—Proposed readjustment of the less-than-carload freight rates on paper and paper articles from the East, including Baltimore, Philadelphia, Richmond, Norfolk, and other eastern seaboards, to interior points and other southeastern points, were found justified by the Interstate Commerce Commission (Docket No. 3007).

Proposed changes in less-than-carload and carload commodity rates in Illinois Freight Association, Western Trunk Line and Central Freight Association Territories, were found justified only in certain particulars, in another lengthy decision just handed down by the Commission (No. 2821).

Rates charged on imported newsprint paper, in carloads, in Texas, were found unreasonable, and reparation was awarded (No. 17985).

Rate on paper shopping bags in a mixed carload with paper bags from Ohio to Louisiana was found unreasonable and reparation awarded on complaint of a manufacturer of pulp, paper and paper bags, (No. 19171).

Recent Customs Decisions—Under a ruling just laid down by the U. S. Bureau of Customs, all customs authorities are hereafter to seize all articles required to be marked under the federal marking statutes, not so marked when imported, amending T. D. 39266 accordingly. (T. D. 42757).

Paper testing machines, classified at 40 per cent under par. 399, tariff act of 1922, were claimed dutiable at 30 per cent under par. 372, and in a decision just handed down the U. S. Customs Court upholds the protest (Foreign Paper Mills, No. 243814-G).

Printing paper was classified for duty at one-fourth of 1c per pound and 10 per cent ad valorem under par. 1301, but was claimed duty free as standard newsprint paper under par. 1672. The protest was sustained (No. 56732-G).

Tariff Commission Holds Inquiry on Glue Tariff—Readjustment of the tariff relationship between domestic and foreign glues was discussed at hearings begun by the U. S. Tariff Commission recently in connection with the cost-of-production investigation now under way.

Recent Patent Decisions—An improvement to a papermaking machine, refining prior art, was held to be valid. in a decision just handed down by the U. S. District Court (Equity 3441, E. D. of Pa.), since the principles were combined to increase utility, and the design of Millspaugh roll being found to have solved the problem in industry.

Devices for Testing Paper at Variance—Various testing devices for determining the tensile strength of paper, give results which do not agree with one another, although the individual instruments may give reproductive results, is the conclusion reached by the Bureau of Standards following exhaustive tests. Six tests of various types were studied, 3 of the swinging arm or pendulum type, one hydraulic pressure gauge, and two of the portable type for field use. Seven samples of paper were used in the tests, ranging in tensile strength from 6 to 30 pounds. A total of 1,680 test specimens were used. All work was done under standard atmospheric conditions. It was found that most of the testers gave a fair performance in regard to reproducibility of results, but that, in general, they did not agree with one another in the test results obtained. The maximum variations occurred in testing samples having a low tensile strength.

Venezuela Only Country not in 2c Stamp Class—Venezuela is the only South American country requiring more than 2c an ounce for first class mail, as it is not a member of the Pan-American Postal Union, and requires 5c an ounce on all first class mail from the U. S. Much mail is said to arrive in that country from the United States with only a 2-cent stamp to pay charges, and is therefore held up for postage due.

Germans Study American Advertising Methods—A group of German advertising experts are sailing for the United States this month for a two weeks tour in July of New York, Philadelphia, Buffalo, Pittsburgh and Detroit, to study American advertising methods.

Advertising Through the Mails—Business men who honestly advertise and sell directly through the mails need have no fear of postal regulations, says the Solicity for the Post Office Department, in discussing the Supreme Court decision holding that a purchaser is defrauded under the postal fraud laws whenever he is furnished an article differently in quality and value from that which he is led to believe he will receive. The laws simply provide against exaggerated and magnified statements of the qualities of merchandise, assigning to it qualities not possessed by the article.

Wholesale Prices—A rise in the general level of wholesale prices from March thru April amounting to 1½ per cent is shown in data just released by the Bureau of Labor Statistics. The following changes are shown for paper and pulp products, with 1926 as the basis of 100, viz:

1927 April	1928 March	1928 April	Purchasing power of 1926 dollar in April (cents)
93.4	90.5	90.2	110.9

Employment—Employment in manufacturing industries was only .5 per cent lower in April than in March, while pay-roll totals fell 1.4 per cent. The following changes are shown for paper items generally, with 1923 as the basis of 100:

	Employment			Pay-roll totals		
	1927	1928		1927	1928	
	April	March	April	April	March	April
Paper and printing	103.6	102.4	101.4	113.0	113.1	112.3
Paper and pulp	94.2	90.4	89.8	100.2	98.3	97.1
Paper boxes	95.3	94.2	92.1	105.0	106.5	103.5

Survey of Factory Equipment—The Department of Commerce is planning a survey of all factory equipment in the United States, to present in statistical form the total amount of modern-up-to-date machinery now in use, the total amount of obsolete equipment still in use, and the semi-modern type of machinery. This will form a valuable statistical study for manufacturers generally when completed.

Waxed Paper Industry—On application of manufacturers producing at least 70 per cent of the waxed paper of the United States, the Federal Trade Commission will hold a trade practice conference in Washington in the near future.

Paper Box Industry—A study of the paper box industry in New York City has been prepared and published as Special Bulletin No. 154, by the Bureau of Women in Industry, N. Y. State Dept. of Labor.

Chemicals Used in the Manufacture of Paper in Canada—A recent report issued by the Dominion Bureau of Statistics, Ottawa, shows the following consumption of chemicals utilized in the manufacture of paper during 1926, exclusive of chemical and mechanical pulp:

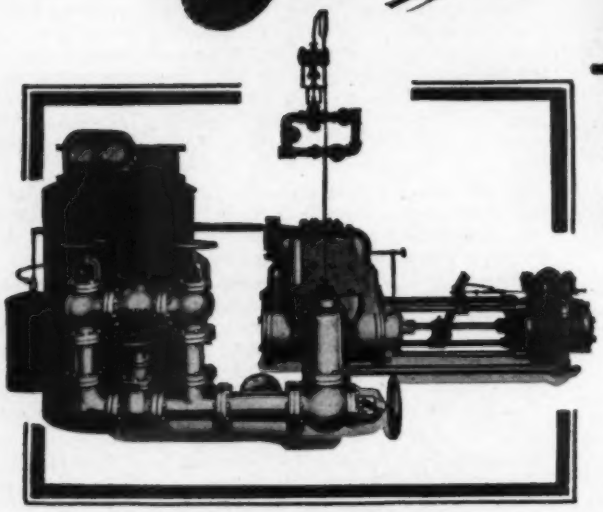
	Tons	Value
Alum	19,404	$ 627,901
Casein	469	110,542
Clay	13,410	220,816
Dyes and colors	.....	295,138
Size	9,161	622,924
Whiting	243	11,316
Miscellaneous	.....	3,728,682

Of the total consumption of alum, Ontario is credited with consumption of 10,419 tons, Quebec and New Brunswick 8,395 tons, and British Columbia 590 tons. (Commercial Attache Lynn W. Meekins, Ottawa).

Edwin Morey, proprietor and general manager of the Flather Company, Nashua, N. H., is building a special line of waxing, oiling, coating and saturating machinery, which has proved to be of exceptional merit. Gibbs-Brower Co., Inc., New York City, have been appointed by Mr. Morey as selling agents for this line of machinery. Their address is 261 Broadway, and they will be glad to furnish any information desired.

Why certainly!

Fulton had a Hand in making these Records



360 Miles of News Print

30 Hours Without a Break

62½ Hours on Another Non-Stop Run

You feel that everything has to be right when a high speed news machine reels off 360 miles of paper without a stop or break. You KNOW it's so when another spins off twice as much—twelve car loads—62½ hours without a break.

In both mills, a Fulton Dryer Drainage installation played an important part, kept the paper machine dryers right up to scratch. Such runs could never have been made with an inferior dryer drainage system.

You are not getting the dryer results without a Fulton Dryer Drainage System that you would get with one. Don't take our word for this. Visit some mill so equipped and ask questions. Also write us.

THE FULTON ENGINEERING COMPANY

Middletown, Ohio, U. S. A.

Western Rep. WOODBURY & WHEELER CO., 55 2nd St., Portland, Ore., U. S. A.

Fulton

Dryer Drainage Systems

OHIO NEWS

Franklin Meeting of Miami Valley Supts

The Miami Valley Division of the American Pulp and Paper Mill Superintendents Association held its regular monthly meeting May 26, 1928 at the Hamilton Inn, Franklin, Ohio. Forty superintendents were present, representing seventeen mills throughout the Valley. A most enjoyable dinner preceded the meeting.

H. H. Latimer, chairman, conceived the idea of selecting talent from among the superintendents. Herbert Server of the Oxford-Miami Paper Co. and H. T. Randall of The Champion Coated Paper Co. were asked to talk on "White Water" and W. W. Galloway to speak on the subject of "Stream Pollution."

Savealls—In the brief time that Mr. Server was on the floor, he gave some very interesting information regarding tests made in the Oxford-Miami mill. Tests were made on the screen type of savealls and the sedimentation type, which were along the line of his talk, and he also told of a complete survey which had been made regarding stock losses.

Mr. Randall depicted the history of savealls in the mills of The Champion Coated Paper Co. Some years ago they installed a make of saveall, which, of course, was good in its day. Laboratory analysis showed that in 1926, five to thirteen pounds of solids per thousand gallons of water discharged into the sewer and this coming from nine machines, represented an enormous amount of money. This had gone through the old savealls too. In 1927, The Oliver Continuous Filter Co. made an installation, and the difference in savings is almost unbelievable. Actual laboratory tests show that the savings given above was increased to .2 lbs. to .5 lbs. per gallons of water through the savealls. Mr. Randall explained their process of saveall operations by the introduction of beater stock in order to make a heavier mat on the saveall wire. Their stock in the white water has been jordaned and too fine to run over the Oliver at a noticeable saving. However, by adding the long fibre stock from the beater, the mat will form on the wire and the short fibers retained, thus the small loss of only .2 lbs. to .5 lbs. of stock per 1000 gallons to the sewer. The Champion Coated Paper Co. uses Olivers in connection with bleach washing which was also explained in detail by Mr. Randall.

Stream Pollution—W. W. Galloway of the Hagar Strawboard and Paper Co., Cedarville, O., stated he had been actively in touch with this subject since 1922, at which time the streams were under the control of the Fish and Game Association and the Health Department of the State. These factors took the point of view that the streams should be kept fresh and well supplied with fish, forgetting the increasing number of manufacturers and industries in towns along the rivers. This, however, was brought to a head by a session of the legislature in February, 1923. It was discovered that pollution was not only due to industrial concerns, but also some of the high priced sewage disposal plants in Ohio. A new view was taken and an intelligent survey made of the streams in the State. About that time, a bill was brought before the legislature to completely change the layout regarding what pollution really was and what the penalty should be. The bill was so drawn that it required the co-operation of the Ohio Manufacturers Association and the fish and game authorities of the different counties. Each industry was then asked to take care of its own problem. This has been done in other states and worked out to advantage. In 1924, the paper manufacturers were called together as a whole, and then divided into classes such as makers of tissue, book, bond, boxboard, etc., each to study its own problems. At the present time, these divisions are co-operating with the State Board of Health and much study is being made to clarify the streams.

The next meeting of the Division will be held June 30, at the Hotel Anthony Wayne, Hamilton, Ohio.

The 100 per cent record of the Sorg Paper company was broken by the accident to Albert Tirey, 50, resulting in his death Saturday, June 2. He was killed when he fell 25 feet from a traveling crane in one of the company's mills.

Tom Harvey and son, Harold Harvey, of the Gardner-Harvey Paper company, were the representatives of that concern in attendance at the annual meeting of the National Pulp and Paper Mill Superintendents Association in Pittsfield, Mass. June 1-6. Mr. Harvey was elected vice president of the National Association with which paper mill men from all parts of the United States and Canada are affiliated.

WISCONSIN NEWS

State Forestry Program

Wisconsin has been disappointed in the most notable attempt ever made by paper mill and lumber interests and the conservation organizations to put practical measures into effect to save the fast dwindling forests. Dilatory procedure in creating a federal forest preserve of 500,000 acres brought the project to completion too late for action by the Federal Forestry Commission at its meeting May 22. Now the proposition must hold over until the next meeting in December, making it impossible to clear the land and start tree planting this year.

The state was arranging to take advantage of the new federal law by which the government may acquire lands and set them side as a forest preserve. After considerable effort, the county boards in Price, Vilas, Oneida, Forest and Bayfield counties were induced to transfer large tracts, most of them adjoining one another, the total amounting to 500,000 acres. Most of this is cutover land in the northern section of the state and was to be replanted so as to assure pulpwood and lumber for the future.

Final approval was needed by the state land commission before the transfer could be made to the government. Here the matter of repayment of school loans on these lands became an issue, and it was necessary to adjust this situation before consent would be given. The final arrangements were made too late for the meeting of the federal forestry body.

Gov. Fred R. Zimmerman requested a special meeting of the federal commission, but this was held to be impossible, according to L. F. Kneipp, assistant federal forester.

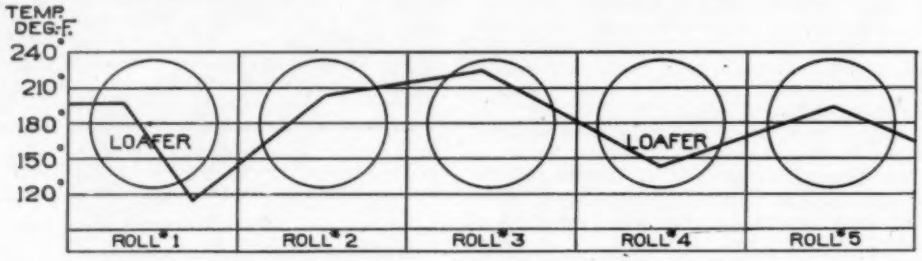
Reforestation is going forward in other parts of the state, however, so the paper manufacturers and others are not entirely disheartened by the delay. Congress has passed the McSweeney-McNary forest research bill, thus giving greatly augmented assistance to the United States Forest Products Laboratory at Madison, Wis., and the Lake States Experiment Station, at St. Paul, Minn. A ten year program of research and experimentation is authorized, largely along the lines of reforestation and conservation. An allowance of $3,700,000 is made for this work, the appropriations to be made by congress.

A joint program for conservation also is being worked out by Wisconsin and Minnesota, as the problems of the two states are somewhat similar and both have extensive paper industries. Meetings have been held by the interim committee of the Wisconsin legislature, and the Minnesota Reforestation commission for the study of taxation, fire prevention, tree planting and other matters. Uniformity of action is sought, as well as an exchange of ideas and methods.

Possibility of 1,000,000 acres being utilized for reforestation also lies ahead. The new Wisconsin severance tax law has made this possible. It permits the exemption from taxation of 400,000 acres in 1928, and added amounts annually until 1934, when the maximum of a million is expected to be reached. Except for a fee annually of ten cents an acre, no tax is charged on tree growing lands until the timber is cut, and the assessment then is computed on the market value of the product.

Counties that have been obsessed with the abandonment of cutover lands by owners to evade taxes have been urged by the Wisconsin Department of Agriculture to solve their problems this way. At present, these counties in the northern forest area hold certificates for unpaid taxes on lands valued

"Locate the Loafers"



TYPICAL TEMPERATURE CHART OF DRYING ROLLS

Drying Efficiency depends on *Team Work* between the rolls. Some rolls hot and others cold means uneven drying and irregular stock.

CAMBRIDGE SURFACE PYROMETER locates the water-logged loafers. At a glance it gives the temperature of the surface of every roll. Any machine man can use it. He doesn't have to *guess*—he KNOWS.

CAMBRIDGE SURFACE PYROMETER keeps every pound of steam at work. Instead of carrying a dead load of water every roll does its share of the job. Use of CAMBRIDGE SURFACE PYROMETER means steam saved, increased production and better stock, saving its cost many times in a year.

Write for List 21

CAMBRIDGE INSTRUMENT CO.

3512 Grand Central Terminal New York

We Have Faith in Our Fourdrinier Wires

We know that all the operations in the making, from the initial drawing of the wire, to the final packing, is expertly done—by men who take pride in their work.

We know our high quality Fourdriniers give satisfactory service and are highly appreciated by a great many paper makers.

And we know you will be as enthusiastic in praise of them, if you will give them a trial.

Our Wire Cloth, Cylinder Moulds and Dandy Rolls also bespeak the highest quality.

CHENEY BIGELOW WIRE WORKS

Established 1842 **Springfield, Mass.**

at approximately $2,500,000. It has seemed feasible to plant these acres with trees and place them under the timber law, so that some revenue eventually will be derived.

Farming has been found to be impracticable in most of this region, and the few settlers scattered here and there have been able to make barely a living. These farmers probably will be transferred into consolidated acres so that large acreages may be devoted entirely to reforestation. It has been found that these lands still are ideal for growing the timber which they have produced in the past.

Newsprint Production Increasing

Although newsprint production is on the decline in Wisconsin paper mills, the output in general has been increasing and now has reached 2,200 tons daily, according to figures announced by the Wisconsin Manufacturers Association. Among the items which show gains are glassine and greaseproof papers, straw board and corrugated board, coated papers and specialties such as napkins and crepe. There has been a large increase also in cellucotton products.

Canadian competition has had much to do with the increasing trend toward higher grades and specialties. With pulpwood growing more remote, print cannot be sold in Wisconsin as cheaply as in Canada where the problem of long hauls to the mills does not exist. The biggest cut in news print will come when the Consolidated Water Power and Paper Company changes over to higher grades of paper at its main mill at Wisconsin Rapids, Wis. Construction already is in progress to accomplish this. This mill, with the fast machine installed several years ago, has had an immense print output. Its future production of newsprint will be entirely from its new mill of the Thunder Bay Paper Company, of Port Arthur, Ont., where its source of supply and productive facilities can keep pace with other Canadian production. Ground wood book paper hereafter will be made at Wisconsin Rapids.

A large factor in the increased output of glassine and greaseproof papers is the Nicolet Paper Company, of De-Pere, Wis. This company was organized to take over the American Writing Paper Company's mill there, and the plant was converted to the new line. A carton plant also was built by the Menasha Wooden Ware Company, of Menasha, Wis., thus helping to step up the production in this line. Revival of several idle mills also shows its effect in the manufacturing figures.

Continued improvements are in progress at the Appleton Coated Paper Company, of Appleton, Wis. Charles S. Boyd, president and general manager, has announced the proposed construction of a new finishing room costing $125,000. It means no increase of production, but merely meets a demand for more space, occasioned partly by the addition of another coating machine last year. The building will be of one story with basement, and will be 240 by 105 feet in size. It will be of concrete, brick and steel.

When speed was needed recently in the testing of a newly developed paper for creping, the Bay West Paper Company, of Green Bay, Wis., resorted to the use of an aeroplane. As soon as some of the paper was made by the Mosinee Paper Mills Company, of Mosinee, Wis., a quantity was taken to Green Bay to ascertain whether it would crepe satisfactorily. Two tests were taken, requiring only three hours each for the trip both ways and the tryouts.

The Northern Electric Company, a subsidiary of the Northern Paper Mills, Green Bay, Wis., has announced a bond issue of $4,000,000, drawing interest at five per cent. The funds will be used to finance the twin power plants completed last year on the Menominee River, one of which is supplying the Northern mills, and the other the Milwaukee Electric Railway and Light Company, under contract. The issue is secured by a first mortgage jointly on the power plants and the paper mill, with an estimated value of approximately $8,000,000.

Although the Park mill of the Marinette and Menominee Paper Company at Marinette, Wis., has exceeded all its previous records, an accident has put an end to its efforts to run indefinitely without a lost time accident. Leo Belaire, an employee, was burned so severely on his arm that he was obliged to be off duty. The safety run dates from January 28th, and the record up to the time of Belaire's mishap was 119 days, the longest the mill has had. The company's other mill at Menominee, Mich., has fared much better. Its 200 employees have avoided accidents now for 200 consecutive days since October, 1927, and hope to keep up the good fortune until the no-accident campaign of the National Safety Council is closed so they can qualify for honors.

Experiments in the use of "Tawa" wood for papermaking, as tried in the Consolidated Water Power and Paper Company's mill at Wisconsin Rapids, Wis., are reported to be quite successful. The United States Forest Products Laboratory has been working on this project for some time and expects to announce its full findings soon. The New Zealand government is desirous of utilizing this wood for papermaking, because of large quantities in that country, and shipped a consignment to this state for experimentation purposes. Should it be found generally practical, the government will erect mills to produce enough paper to supply its needs.

A Tragic Accident

On Sunday evening, May 27th, there was a tragic automobile accident just outside the city of Green Bay. While returning home from a day's outing on the Eagle River, Mr. and Mrs. Harvey G. Stewart and Mr. and Mrs. Arthur G. Buffard had their car overturned, resulting in the immediate death of Mrs. Buffard and later in the death of Mr. and Mrs. Stewart. Mr. Buffard suffered only slight injuries.

The burial of Mr. and Mrs. Stewart took place on Thursday, June 7, at Green Bay. Mrs. Buffard's remains were taken to her home in Rumford, Me., by her husband, where burial took place on June 4.

This tragedy has left a deep sense of gloom as both couples enjoyed a wide circle of friends. Mr. Stewart was director of the Wisconsin Vocational School at Green Bay and Mr. Buffard is the instructor of pulp and paper manufacture in the Vocational School at Appleton.

Use of a freight steamer to transport finished paper from Port Arthur, Ont., to ports on the Great Lakes will be tried out by the Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis. The bulk freighter Francis L. Robbins has been purchased from the Becker Steamship Company, of Cleveland, Ohio. It has a capacity of 6,500 tons and is being equipped with special machinery for the handling of paper shipments. The company has operated quite successfully with boat shipments of pulp wood and pulp and believes the new plan also will be feasible.

Sidney DuHaime, who has been a foreman of the Victory Bag and Paper Company, of Menominee, Mich., has tendered his resignation. He intends to locate in the west, possibly engaging with one of the western mills.

E. E. Routh Is Manager of Sales

The Mathieson Alkali Works, New York, has announced the appointment of E. E. Routh as manager of sales, following the resignation of John W. Boyer, who had occupied that position for the past six years. Mr. Routh has been a member of the Mathieson organization for thirty years, with the exception of four years in college, having started in as office boy at the Saltville plant at the age of eleven. For the past eight years he has held the important post of southern sales manager, with headquarters at Charlotte, N. C. Effective at once, he will now be transferred to the executive offices of the company in New York City.

The Mathieson Alkali Works also announces the appointment of Fred O. Tilson, who has been representing the company in the Southwest, as Southern District Sales Manager, with offices at Charlotte.

Queen Victoria greets President Buchanan

"Europe and America are united by telegraph. Glory to God in the highest; on earth peace, and good will toward men."

Thus read one of the most momentous messages of all times—the first telegram across the Atlantic on August 17, 1858. It was followed by other messages between the Queen and the President.

No doubt Asa Shuler and J. W. Benninghofen paused in their work for a few moments when the newspapers carried the news, but not for long.

Theirs was only a new business, having been started early in the same year, and still requiring close attention. But already paper mills were beginning to see that these two young men were producing a better kind of paper making felt.

The descendants of these two men are making still better felts. For they have in back of them all this accumulated experience gained in more than 70 years of felt manufacturing. They have learned what to do as well as what not to do.

And the result is a felt that takes out water in more than usual quantities; that wears long with less down time for washing; that helps to produce a better finished piece of paper—in a word a felt that saves money and makes money for you.

Try a Hamilton Felt on your hardest machine. Give it every test of inspection and service you think a felt ought to have. You will want to use Hamilton Felts on all your machines.

Ask the Hamilton Felt Man the next time he calls or write us direct—he is a practical paper maker as well as a felt expert.

Shuler and Benninghofen, Hamilton, Ohio

The Miami Woolen Mills

ESTABLISHED 1858

Hamilton Felts

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

MICHIGAN NEWS

Bryant Paper Company Stock

Sealed proposals are invited and will be received until 3 o'clock p.m. June 1, 1928, at the office of the Union Trust Company, No. 7 South Dearborn street, Chicago, Illinois, trustee for the sale of all or any part of sixteen thousand six hundred par amount of Series "B" bonds of the Bryant Paper Company date January 1, 1928, for purchase on account of the sinking fund for Series "B" bonds.

The trustee reserves the right to reject any or all bids not satisfactory to said trustee. The offers of bidders unknown to the trustee, must be accompanied by satisfactory references.

Such offerings as are accepted will be those of the lowest bidders within the amount stated. The parties making such offers will be informed immediately after the close of offers of their acceptance, and payment will be made upon deposit of the amount necessary to purchase bonds and on surrender and transfer of the bonds on or before July 1, 1928.

Should two or more holders bid the same lowest price, the number of bonds taken from each will be, as nearly as practicable, pro-rata.

Proposals should be indorsed, "Proposals for the sale of Series "B" bonds of the Bryant Paper Company," and addressed to the Union Trust Company, Trust Department, 7 South Dearborn Street, Chicago, Illinois.

Bids to be acceptable must be at a price not exceeding one hundred four and accrued interest. All offers must be accompanied by the bonds, or the numbers must be specified.

Interest will cease on all bonds tendered and accepted for purchase on July 1, 1928.

Parchment Mill Will Offer Bonds

The Kalamazoo Vegetable Parchment Company, through the Union Trust Company, Chicago, is placing on the market $1,250,000 series B 15-year six per cent gold bonds, maturing in 1943 and priced at 101 and netting the investor 5.90 per cent. This issue will give the concern $2,750,000 in bonds outstanding.

The last issue is dated April 1, 1928, and is due June 1, 1943. It is callable at 103 to 1933, 102 from 1933 to 1938, and 101 thereafter.

According to the statement, the current assets of the company are $2,366,597.32, with current liabilities of $689,068.65, a ratio of better than 3½ to one. Total assets are $7,350,-867.49 and surplus $907,852.16.

Sutherland Stock to Go on Exchange

Increase in the capital stock of the Sutherland Paper Company from $1,500,000 to $1,750,000, by the sale of 25,000 share of $10 par value common stock is a proposition to be considered at a special meeting of the company's stockholders called for 4:00 p.m. Monday, June 11.

Stockholders are asked to waive their right for the purchase of any of the additional stock. The official notice also states that the $400,000 received from the sale of the stock, will be used for corporate purposes, which will increase the earnings of the company materially.

There is a very active demand for Sutherland Paper Stock and the common was being sought Thursday at $18, an advance of $2 over previous price, with very few sellers.

On Tuesday, June 12, 1928, at 10 o'clock a.m., there will be sold at public auction at the Michigan Central Railroad Company's freight house at Kalamazoo, Mich., one high gloss paraffin machine, which was shipped by the International Paper Box Machine Company of Nashua, N. H., July 2, 1927, consigned to the Standard Paper Company, at Kalamazoo, Michigan, and refused on arrival.

The use of tank cars for the shipment of both liquids and solids was discussed Tuesday evening, May 1st by George J. Bolender, traffic manager of the Western Paper Makers' Chemical Company, who addressed the Traffic Club of Kalamazoo. This organization adjourns sessions for the summer period, but will hold at least two more meetings.

Felix Pagenstecher, president of the Bryant Paper Company, who has been ill, for some time at his Grand avenue home, has been removed to New Borgess hospital, and favorable reports as to his condition have been received.

Eugene Evans, a former resident of Grand Junction, dropped dead Tuesday, May 29th at the Standard Paper Company plant where he was employed.

It is reported that suit for receivership, filed by Fred Dewey of the Kalamazoo Trust and Banking Company and others in this city against the Lincoln Paper Mills of Elkhart, has been transferred. The change was asked by the defendants. The case, when called again, will be before the Kosciusko County circuit court, Warsaw, Ind.

The Cost, Technologist and Superintendents' Association of the Paper Industries held a joint dinner Thursday evening, May 17th at the Columbia hotel. This meeting was the last meeting of the Superintendents but the Cost will have one more. Two papers were read at this meeting, one by C. E. Torrence, personnel director of the Bryant Paper Company, and the other by W. J. Weed, of the Elector-Bleaching Gas Company. Both papers were very interesting and was a very good way in ending the year for the superintendents.

Suits for Compensation

Peter Flipse brought suit against the Bryant Paper Company for ill health which he claims is due to an old injury suffered in 1923. He appeared before the State Industrial Accident Board May 16th for a hearing, and his petition is under advisement.

Mrs. Alta M. Berns also appeared before the State Industrial Accident Commission May 16th for hearing in suit brought by her against the Allied Paper Co., Kalamazoo, Mich., for compensation in the death of her husband, who it is alleged died from injuries sustained while working in this company's plant. The case is under investigation by the board.

Steve Boersma, an employee of the Kalamazoo Vegetable Parchment Company, was killed May 23rd when he was caught between the floor and an elevator while working in the plant.

Alfred Bryant, who was for many years superintendent of the Milham Division of the Bryant Paper Co., and later superintendent of the Watervliet Paper Co., Watervliet, Mich., has accepted a position as superintendent of the Newton Falls Paper, Newton Falls, N. Y. Mr. Bryant has already taken over his new duties.

Government Apprentices Visit Glatfelter Plant

One hundred and forty-five members of the Apprentice Course of the Government Printing Office, made an inspection of the plant of the P. H. Glatfelter Co. at Spring Grove, Pa. on Friday, May 18.

The trip from Washington to Spring Grove was made via motor busses, the party being in charge of Burr G. Williams, Instructor of Apprentices. Preparatory to the trip through the pulp and paper mill, a picture of "A Short Course in Papermaking" was shown in the auditorium of the Papermakers' Club. This enabled the apprentices to follow more intelligently their trip through the mill.

The party was split into groups each accompanied by a guide, and the process of papermaking was explained from the wood yard to the finished product. On leaving, Mr. Williams presented the officers of the company with a handsomely printed expression of appreciation by the United States Government Printing Office Apprentices, containing a roster of all the apprentices who visited the plant.

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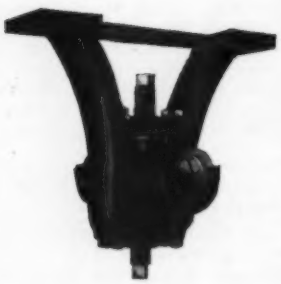

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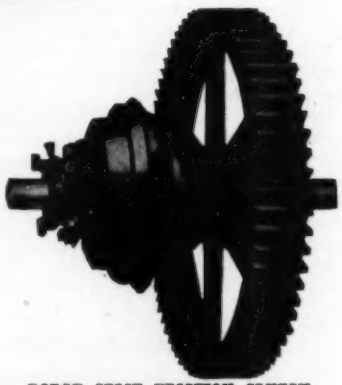
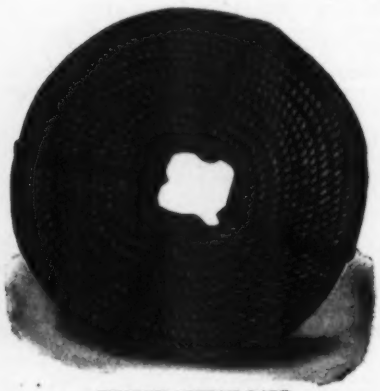


DODGE SPLIT FRICTION CLUTCH WITH SPUR GEAR



KENYON COTTON ROPE

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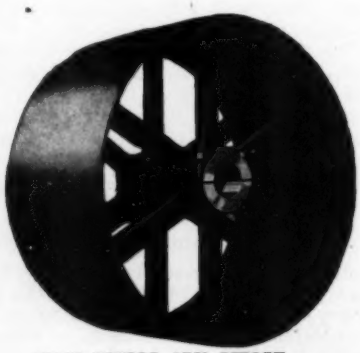

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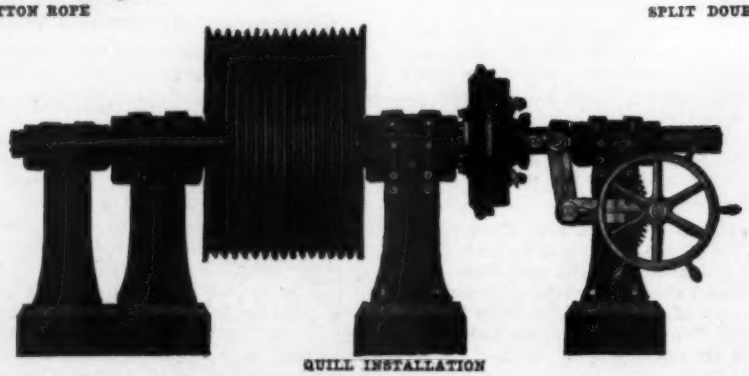

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Canadian News

Newfoundland Benefits by I. P. Deal

In order that the public might have full information in regard to the conditions attaching to the sale of the Newfoundland Power and Paper Co. to the International Paper Co., the Newfoundland Government has issued a synopsis showing on the one hand the advantages accruing to the Island Colony, and on the other hand the advantages accruing to the International Paper Co. The Particulars are as follows:

Under the agreement the Colony gets the following:

(1) Construction of four new paper machines (with a capacity of at least 400 tons a day) before 1933 (subject to extending the Gander Valley project to 1935 on payment to the government of $100,000). This will mean employment for over 2,000 people, expenditure of from 15 to 20 million dollars on construction, an annual expenditure within the country of over $3,500,000 on operation after completion of construction, added revenue of at least $1,500,000 for the government and also yearly revenue from duties at the present rate (except on some replacements) on everything imported for operation.

(2) From the taking over of the Cornerbrook mill the elimination as a practical matter of: (a) the menace which the Colony faced of having the operations curtailed with consequent loss of employment; (b) the possibility of the Colony having to meet interest and sinking fund on the "E" debentures (nearly $1,000,000 a year).

(3) The Government will get $75,000 a year for 1928, 1929, 1930 and 1931, and thereafter $150,000 a year until 1973.

(4) Exemption from duties on construction are cut from 30 to 20 years, and the exemption on electro-chemical, metallurgical, etc., operations, is cut down from 50 to 20 years.

(5) Immediate employment is provided through the 25,000 to 30,000 cords of pulpwood which the Gander company will cut if requested, meaning an expenditure of $300,000 a year in the logging years starting in 1928 and ending with 1933.

(6) Surrender by the company of its right to a grant of a large water power on the Hamilton River, Labrador.

This is what the company gets from the Government:

(1) Right to export one half cord per year for each ton of production from the new machines to be built by International, exclusive of the ones at present in operation at Cornerbrook, conditional on construction by 1933 of a 200-ton addition to the Cornerbrook mill, construction of a 200-ton mill in the Gander Valley by 1933 (with the right to extend to 1935 by paying $100,000), operation of the mills at 80 per cent of capacity.

(2) The Government is building about 30 miles of railroad, the company to pay half the interest on the cost of the railway during construction of the mill, and if the latter is not completed by 1935 the company pays full interest and sinking fund.

(3) Certain concessions on payment of duties on construction materials and supplies imported for replacement purposes.

Walmsley Building Minton Dryers for Price Bros.

Charles Walmsley & Co., (Canada) Limited, are well along in the construction of two 234" Minton Vacuum Dryers for Price Brothers & Co., Limited. These machines will be installed in that company's Riverbend Mill, Quebec, some time during the latter part of the summer or early fall. These paper machines will consist of a standard fourdrinier, suction couch roll, two suction presses, no third press and vacuum dryers, calender, reel and rewinder. The ingoing seal is being designed to act as a smoothing press as well as a seal. The vacuum dryer will contain 22 dryers, each 5 ft. in diameter with a face of 234". It will be equipped with a Sheehan carrier and a new and very-interesting type of drive.

The drive is being furnished by the Harland Engineering Co. Each dryer in the vacuum dryer, as well as the seal rolls, is being equipped with an individual worm drive, to each of which will be attached an individual motor. The dryer will be equipped with two top and two bottom dryer felts. Certain of the individual motors mentioned above will be electrically interlocked with the main drive. The remaining motors will act as trailing motors and it will be possible to put either a positive or negative torque on any of these motors, which will make it possible to adjust the felt tension throughout the bank of dryers as well as to adjust the tension in the paper in each and every draw throughout the vacuum dryer.

The drive is being designed to permit a speed of from 600 ft. to 1200 ft. per minute. The vacuum dryer as mentioned above, contains 22 dryers in place of 44, which would ordinarily be installed if the open dryer were used, thus greatly shortening the machine. Also the third press is eliminated because of the fact that the ingoing seal acts as a smoothing press and the two suction presses remove as much water as it is thought possible to remove by any number of presses. This will further greatly reduce the length of the machine. It is hoped to take paper from the last press to the ingoing seal containing not over 62½ per cent moisture.

About fifty steamers are expected to cross the Atlantic this spring to enter the woodpulp and pulpwood and the grain-carrying trades on the Great Lakes and the St. Lawrence River. Five new boats have just been constructed or are nearing completion for the Coal Corp. of Canada. Specially designed for the pulpwood trade, they will carry pulpwood from Mount Louis, Que., to Ogdensburg, N. Y.

Independents Oppose Canadian News Print Co.

A very uneasy feeling prevails at the present time in the newsprint industry, and indications are that the industry is far from improving its position, despite the fact that Canadian mills operated at a slightly higher capacity in April than in the preceding month. The fact of the matter is that the amalgamation of the selling organizations of many of the leading mills in the Canadian News Print Co. has been operating to the advantage of independent companies, for while the former have restricted their output, the latter have not. Thus, it is stated that the independent companies are operating at close to 85 per cent capacity, while those which entered into the Canadian News Print Co. are only operating at something better than 75 per cent capacity.

Two contradictory rumors have been circulating. One is that further amalgamations are in the offing, with a view to a more general, and therefore fairer, restriction of output. The other, which has already proved to be correct, is that certain companies are likely to withdraw from the Canadian News Print Co. and enter the market on an independent basis. The trouble over the Hearst contracts is said to have precipitated matters and to have caused much dissatisfaction. Although the Hearst contracts, giving that publisher newsprint at $5 a ton under the market price, are said to have been cancelled, with a resulting threat that European newsprint may be brought in, there is a feeling that Hearst will find the newsprint he needs in Canada at the price he is prepared to pay.

Three companies have withdrawn from the selling combine, namely, Price Bros. and Co., the Anglo-Canadian Pulp and Paper Mills, and the Brompton Pulp and Paper Co.

Reports of the newsprint situation in Canada indicate a considerable improvement in demand for the month of April

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ROSS SYSTEMS
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as compared with March, and the ratio of production to capacity seems likely to run ahead of the 80.3 per cent indicated in April. Now that Anglo-Canadian's last machine has been started up, there are not likely to be many new machines coming in until the Spruce Falls mill comes into production; so that from now on any increase in consumption in the United States should serve to correct the situation of surplus capacity due to the new machines of the Lake St. John, Thunder Bay and other mills which started up early this year.

Plan for Standardization of Paper

An informal meeting between the members of the printing industry and several mill representatives was held recently in Toronto with a view to standardizing and simplifying the different weights and grades of paper. Another objective is the reduction of the number of grades carried by jobbers and improvement of the relations of the printers and paper makers generally in their consideration of the various problems while incidentally lessening the cost of printing to the consumer.

The whole situation has been thoroughly canvassed and the matter put in concrete form by the appointment of a strong committee to handle and follow up the movement, with Edward Beck, secretary of the Canadian Pulp and Paper Ass'n, as chairman. The general feeling among the printer leader members of the conference was that, with proper standardization of papers turned out by the mills and stocked by the wholesalers, a 10 per cent reduction in the cost of paper to the printer could very easily be effected, and this will be the ultimate goal of the movement.

The Technical Section of the Canadian Pulp and Paper Ass'n will hold its summer meeting June 23rd to the 29th. It will take the form of a trip to Western Ontario, where, by courtesy of the various companies, visits will be paid to the mills of the Fort William Paper Co., Provincial Paper Mills, Thunder Bay Paper Co., Kenora Paper Mills, and Spanish River's Sault Ste. Marie mill.

Shartle Bros. Machines to be Made in Canada

The Shartle Brothers Machine Company, Division of The Black-Clawson Company, Middletown, Ohio, has just completed an arrangement with Waterous Limited of Brantford, Ont., and Charles Walmsley Limited of Montreal, for the construction in Canada of their breaker beaters and breaker beater systems.

This new arrangement will give the Canadian paper mills the advantages of maximum service on account of the location of these two organizations. The sale of this equipment will be handled as formerly from the Middletown, Ohio, offices of the Shartle Brothers Machine Co.

QUEBEC

Howard Smith Reorganizes Financial Structure

In connection with the refinancing of the Howard Smith Paper Mills, Ltd., resulting from the acceptance of the offer for the purchase of that company by Holt, Gundy & Co., announcement was made last month of an alternative offer to common shareholders. Instead of $150 per share in cash, holders of the common will be given the privilege of taking $100 in cash and two shares of no par value common in the new company.

The recapitalization has been carried out by issuing $7,000,000 of first mortgage 5.5 per cent sinking fund gold bonds, $4,500,000 of 6 per cent cumulative preferred stock, and 200,000 shares of common stock of no par value. There will be no change in management.

The company is the largest manufacturer of fine papers in Canada, having an installed capacity of 30,000 tons per annum, which will have been increased to 38,500 tons by about July 1st, in addition to which it controls, through its subsidiary the Canadian Cellulose Co., a bleached soda pulp mill with a rated capacity of 15,000 tons per annum. It operates three paper mills, at Cornwall, Ont., Beauharnois, Que., and Crabtree, Que., all of which are in a condition of high operating efficiency.

Supplementary letters patent have been issued to the Lake St. John Power and Paper Co. ratifying a by-law of the company increasing the preferred capital stock of the company from $2,000,000 to $4,000,000 by the issue of 20,000 new 7 per cent cumulative preferred shares of the par value of $100 each, which will carry the same privileges as set forth in supplementary letters patent of the company, dated February 8, 1927.

The Brown Corporation, the Canadian subsidiary of the Brown Company, of Portland, Me., has called in its 7 per cent cumulative preferred stock, amounting to $2,000,000. This is being redeemed from the proceeds of a new preferred stock issue of the parent company, part of which was offered in Canada. The United States company owns all the common stock of its Canadian subsidiary.

It was recently rumored that an offer to purchase the entire undertakings of the Rolland Paper Co. had been made by the Royal Securities Corp., with the price mentioned in the vicinity of $4,000.000. Official confirmation could be obtained from neither of the interested groups. The company was established in 1883 and has always been under private ownership, being a family undertaking started by the father of the present head of the company.

Dominion Engineering Well Booked

The Dominion Engineering Works are very busy at the present time and have five new big newsprint machines on order. These contracts amount to $1,500,000 and include one machine for the Bathurst mill, now being operated by International Paper, two for St. Lawrence Paper Mills and two for International Paper Co. of New Brunswick. In addition, it is stated that an order for one machine for Price Bros. has been divided between Dominion Engineering and Charles Walmsley (Canada), Ltd.

A large number of paper machines already supplied to newsprint mills is also resulting in Dominion Engineering getting a steady run of orders for parts. This is proving a profitable source of revenue, as higher proportional prices are being obtained for individual sections than when they are supplied as units in a complete machine. Recently some substantial orders have been booked for power generating apparatus, and this line of work has developed into an important factor in adding largely to the company's earnings. With the amount of general work already on the books and the addition of the recent orders for paper machines, it is stated that capacity operations are assured until the end of the year, without taking into consideration contracts that may be closed in the interval.

The Government has offered the Gatineau Power Co., a subsidiary of Canadian International Paper, $525,000 for the New Edinburgh mills situated on the Rideau River, in Ottawa. The property consists of approximately 21 acres and has an available water power of about 2400 h. p.

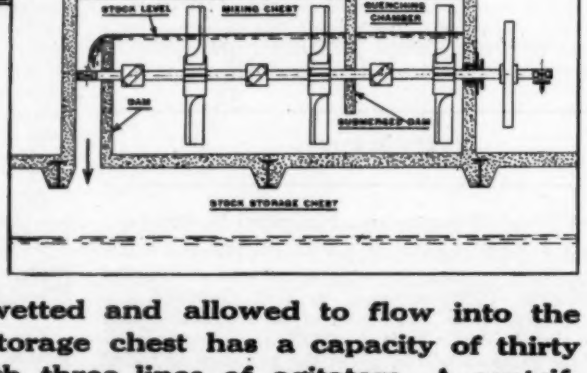
The general commercial position in the Province was explained by Hon. Jacob Nicol recently in his budget speech, showing a surplus of $1,846,294. He expects a reduction in the revenue of the Lands and Forests Department by reason of the curtailment of the cut of pulpwood, the companies having big stocks on hand. The large number of mergers in the pulp and paper and power companies has been under consideration by the government, and Mr. Nicol has issued a warning that any attempt to enhance prices will result in measures to protect both consumers and manufacturers.

The new mill of International Fibreboard, Ltd., a Canadian International Paper subsidiary, which Fraser-Brace, Ltd.,

RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

RYTHER SHREDDER

DRY SHEET PULP SLUSHING SYSTEM



This unit operates on a basis of three tons per hour and prepares thirty tons of sheet sulphite per day. The shredded product is delivered through the mixing chest where the dry pulp is thoroughly wetted and allowed to flow into the stock chest. The stock storage chest has a capacity of thirty dry tons and is built with three lines of agitators. A centrifugal stock pump circulates the stock storage chest continuously, the flow being bypassed for beater furnish when required.

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

have been constructing, is now practically finished and the first unit was put into operation last month.

Senate Party Sees Gatineau Power Sites

An impressive picture of the tremendous developments of the Gatineau Power Co. at Farmer's Rapids, Chelsea and Paugan Falls, was presented last month to a party of 65 senators and officials of the Canadian Senate, who visited these gigantic power plants as guests of Senator Smeaton White, president of the Montreal Gazette and a director of Canadian International Paper, for which the Gatineau Power Co. is a holding company for the power enterprises.

With the completion of its present construction work at Paugan Falls and at Mercier where an immense storage dam is being built, the Gatineau Power Co. will rank as one of the largest hydro-electric power enterprises on this continent. At present, that company owns water power sites in the province with an aggregate potential capacity exceeding 700,000 horsepower.

Thermite has once more demonstrated its efficiency, according to Dr. Howard T. Barnes, professor of physics at McGill University, widely known for its original research in ice engineering, who stated that during the last winter the use of thermite at La Tuque Falls prevented the floods of former years, so that no inconvenience due to water was suffered by the Brown Corporation's pulp mill at that point.

G. E. Booker has recently accepted the position of chief engineer of the Metabetchouan Sulphite and Power Co., Ltd., at Desbiens. Mr. Booker and family moved to Desbiens about a month ago. A few slight changes and improvements will be made to the mill this summer under his direction.

Due to the exceptionally cold weather during the month of April, all the rivers emptying into Lake St. John have been exceedingly slow in opening up. The first of May saw them still ice-bound. The level of Lake St. John is, therefore, very low, and some of the mills in that district were put to considerable inconvenience by dirty water. By the end of the month, however, unprecedented floods caused great damage in the district, but the pulp and paper mills have apparently not been affected so far.

Price Bros. have practically completed the cement work of the new machine room at Riverbend. Steel construction has been started, and it is expected that all construction work will be finished by the first of July.

N. V. Morrison, manager of W. J. Bell Paper Co., Toronto, accompanied by his selling staff of ten salesmen, paid a visit to the plant of the Pyramid Paper Products, Ltd., Montreal, about a month ago. From there, accompanied by R. H. Bryan, manager of Pyramid Paper Products, and J. A. McCullough, sales manager of Brompton Pulp and Paper Co., they traveled to East Angus and Bromptonville, where they spent a day visiting the Brompton mills and were entertained at dinner by general manager J. A. Bothwell of Brompton Pulp and Paper Co.

J. E. Emory has gone to Anticosti Island to take charge of the electrical work. Mr. Emory was for a number of years electrical superintendent for Howard Smith Paper Mills and later in charge of mechanical and electrical work for the Metabetchouan Sulphite and Power Co.'s mill at Desbiens.

Port Alfred Pulp and Paper Corp. have started the construction of a new machine room in which will be erected one of their existing fourdrinier machines, now used for drying sulphite pulp. This machine will be used for drying a coarse paper board composed largely of groundwood and sulphite screenings.

The Rolland Paper Co., at Mont Rolland, has started work on the smaller of its two fourdriniers to increase its speed from 200 to about 300 feet per minute. This machine makes a very high grade of paper from rag stock. The machine is being lengthened and six new dryers will be installed. The dryers will be divided in two sections, and between these sections there will be installed a sizing tub.

At the special general meeting of shareholders of Brompton Pulp and Paper Co., which was held on May 3rd for the purpose of passing on and approving the plan of recapitalization described in these columns last month, the plan as adopted by the directors was duly approved.

Canadian P. and P. Ass'n Moves to New Quarters

On the 28th of last month, the executive offices of the Canadian Pulp and Paper Ass'n were removed from the Drummond Building, Montreal, where they had been located for the last ten years, to the new Pulp and Paper Research Institute, 3420 University St., Montreal, which was erected by the Association at a cost of about $300,000 and will eventually become the property of McGill University.

The new building, which provides accommodation and facilities for researches bearing on the problems of the pulp and paper industry as conducted in co-operation by the department of industrial and cellulose chemistry of the university, the pulp and paper division of the Forest Products Laboratories of Canada, and such research workers as the Association may establish, will not be completed and in full working order much before September; but in the meantime, Edward Beck, secretary of the association, and his staff will be quartered there and the business of the Association will be carried on from the new address.

In addition to the laboratories, which are being fitted up with the latest and best appliances and apparatus obtainable, the building will contain a complete experimental pulp and paper mill, including a practical paper making machine, so that it will soon be possible for anyone interested to study the whole process of modern papermaking without going outside the city of Montreal.

No formalities attended the induction of the Association into the new building, the officers stating that a program to mark the formal opening of the Institute is under consideration for later in the year.

Owing to the strong opposition of Major G. C. Power, Liberal member for Quebec South in the House of Commons at Ottawa, to an item of $300,000 provided in the estimates for harbor improvements at Ellis Bay, on Anticosti Island, the item was allowed to stand for the time being, and may be shelved completely. Major Power based his opposition on the fact that the Anticosti Corp., which will be the one to benefit by the proposed improvements, is one of the wealthiest companies in Canada, and is not undertaking development or colonization work, but intends merely to cut all the pulpwood from the Island (which it purchased some time ago from Senator Menier, of France) and then move away.

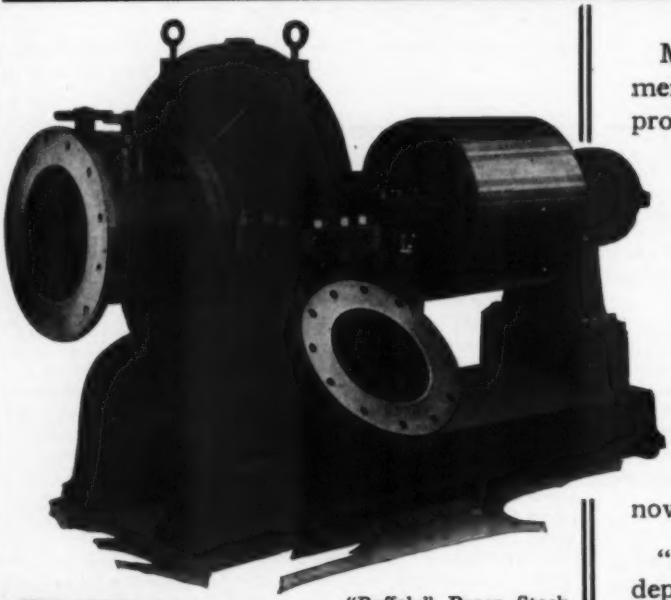
The Donnacona No. 1 and Donnacona No. 2, steel motor barges, built at a cost of $50,000 each, were recently launched at the docks of the Canadian Vickers Co., Montreal. They will be used for transporting pulpwood from the Donnacona Company's limits on the lower St. Lawrence to the mill at Donnacona, for which purpose they will replace the wooden boats heretofore used.

The second of the big 34,000 h. p. generators at the Paugan Falls hydro-electric power plant of the Gatineau Power Co., was turned over on May 25th, in presence of company officials, and is now delivering power. This plant is to be equipped with an initial installation of five such generators, while ultimately it will contain eight. The plant will supply the Ontario Hydro-Electric Power Commission, under contract, with 160,000 h. p. for a period of thirty years.

Brompton Contracts for its Output

Last year, while the mill of the Lake St. John Power and Paper Co. was being constructed at Dolbeau, the Hearst publications had contracted to take the whole output of news-

Meeting Paper Mill Requirements



"Buffalo" Paper Stock Pump. Positively non-clogging, even on heavy stock.

"Buffalo" Stoker Fan

"Buffalo" Spray Nozzle Produces a fine even spray.

"Buffalo"

Modern, dependable paper mill equipment not only guarantees superior production but also means a saving of both time and money. Paper mill operators realize the importance of this fact—and that explains why they choose "Buffalo" products.

Frequently a substantial saving is obtained by installating "Buffalo" Mechanical Draft Apparatus, whether you are using stokers or hand firing your boilers. Many of the largest mills in America are now using "Buffalo" stoker fans.

"Buffalo" Spray Nozzles do not depend upon a small opening to break the water into a fine spray, making them absolutely non-clogging. Do not require any flushing device. Have no moving parts to get out of order or wear out.

"Buffalo" not only offers you a complete line of all sizes and types of both steam and centrifugal pumps, but also designs special pumps to meet unusual requirements.

Our competent engineers are always ready to help you solve your difficulties. Write today. No obligation.

Buffalo Forge Company

Buffalo Steam Pump Company

213 Mortimer St. Buffalo, N. Y.

In Canada
CANADIAN BLOWER & FORGE CO. LTD., Kitchener, Ont.

Paper Mill Equipment

print of the Brompton Pulp and Paper Co. till the end of 1927. The contract was terminated with the coming into production of the Lake St. John mill at the beginning of the present year. It has now been announced that Brompton has contracted to sell its whole output to the Hearst interests for a period of five years. The price has been fixed only for the first year, and may be adjusted to meet any changes in prevailing conditions in the market for newsprint. As a result of having secured this contract, Brompton has decided to withdraw from the Canadian News Print Co., which is handling the sale of over 50 per cent of the Canadian newsprint production.

It is of interest to note that Lake St. John Power and Paper, which has also contracted to sell its whole output to the Hearst publications, and Brompton were at one time mentioned as possibilities for a merger, as it was known that Dominion Securities Corp. had a considerable interest in both in connection with recent financing of the two organizations. Another link between the two newsprint companies is that Brompton holds extensive limits in the Lake St. John district.

The Shawinigan Water & Power Co. has obtained rights of developing a series of rapids on the St. Maurice River, which, it was estimated conservatively, would mean an additional possible supply of power for that company reaching over 600,000 h. p. The company must pay an annual royalty of $1 per horsepower developed, and must not export any of the power developed to the United States.

Work is already in hand to complete the installation of the plant addition being carried out by St. Lawrence Paper Mills Co., Ltd. This is in charge of the Foundation Co., Ltd. Two paper machines have been ordered from the Dominion Engineering Works, which are expected to be in operation by the end of the present year; and it is understood that another two machines are to be installed at a somewhat later date.

Holders of the 8 per cent preferred stock of Brompton Pulp and Paper Co. have been notified that, under the provisions of by-law No. 38, the company will redeem these securities at a price of $133.50 per share and accrued dividends.

Kamyr Wet Machine Installed at St. Maurice

The St. Maurice Valley Corp. is installing a Kamyr wet machine at its Cap de la Madeleine mill. The cement foundation has already been poured and it is expected to have the machine in operation by the beginning of next month. It will take the place of five wet machines which have been used up to the present time, and will handle the entire kraft output of the mill, which is about 60 to 70 tons per day.

The pressed pulp will be cut in squares and shipped as it leaves the press. The machine is situated close to the freight cars, which enter the building. The sheets will be discharged on to small trucks, weighed on scales situated at the end of the press, and loaded directly into the cars. This will mean a saving in labor. The kraft pulp as it comes from the screens will be elevated by an Oliver filter which will dewater the stock from about one-quarter of one per cent to four per cent consistency. It will then flow to a tank and thence to the Kamyr press.

A federal charter has been granted to Paper Mill Equipment, Ltd., with a capital stock consisting of 125 8-per cent, non-cumulative, non-participating preferred shares of a par value of $100 and 400 common shares without nominal or par value. The company is empowered to manufacture, sell, deal, etc., in all kinds of machinery supplies, apparatus and equipment. Among the incorporators are F. G. Bush and Herbert W. Jackson, both of Montreal, where the head office is situated.

The Wayagamack Pulp and Paper Co. at Three-Rivers has just completed a large wharf on its property bordering on the St. Lawrence River. It will be used to unload pulp wood brought up by steamer from the timber limits on Anticosti Island, and it is of ample size to allow large steamers to be loaded with paper and pulp produced by the mill. The wood will be unloaded from the boats by two large derricks equipped with jaw grab hooks and discharged to a long water flume which will carry it to the log pile conveyor.

Reorganization of St. Lawrence Mill Ratified

At a special general meeting of shareholders of St. Lawrence Paper Mills, held in Montreal on May 7th, the plan for the sale of this company to a new organization (the details of which were given in these columns last month) was ratified.

An interesting forecast as to the earning power available to the company is contained in a letter which went forward some time ago to the old company's common shareholders. This indicated that at today's low price of newsprint, net on the new common is conservatively estimated at $2 per share this year and $2.85 per share on completion of the extensions at present planned, without allowing for an increase in the market value of newsprint. Should such occur, earnings of the company, both on its present and proposed capacity bases, would increase accordingly.

ONTARIO

Great Lakes Mill Progressing Rapidly

The Great Lakes Paper Co., which for the last few years has operated a 165-ton groundwood mill at Fort William, will be turning out newsprint in the course of a few weeks. The first machine is now being set up, and Joseph Dwyer, manager of the company, is enthusiastic of the great work that has been carried out so rapidly and so efficiently. The installation of this machine will be followed by that of another, and ultimately by a third, the total capacity of the three being about 400 tons of newsprint a day. The second machine will be installed about January 1, 1929, it is expected. Ultimately, when the final plants have been put into effect, the mill will have a capacity of 1000 tons a day.

Extensive construction operations are still in progress at the site, about 720 men being employed. Work to be prosecuted this summer includes a new sulphite mill to be completed by next January. There also will be an addition to the groundwood mill, involving the installation of twenty new grinders which will double the present capacity of the mill. Extensive docks also will be built, and the machine building and other structures completed. The newsprint machine to start in July will be 264 inches wide, while the second one will be 304 inches wide, exceeding by 34 inches the big machines at the Gatineau mill of Canadian International Paper, which are the largest in the world at the present time.

The company has issued $10,000,000 first mortgage sinking fund 6 per cent bonds to finance the construction work.

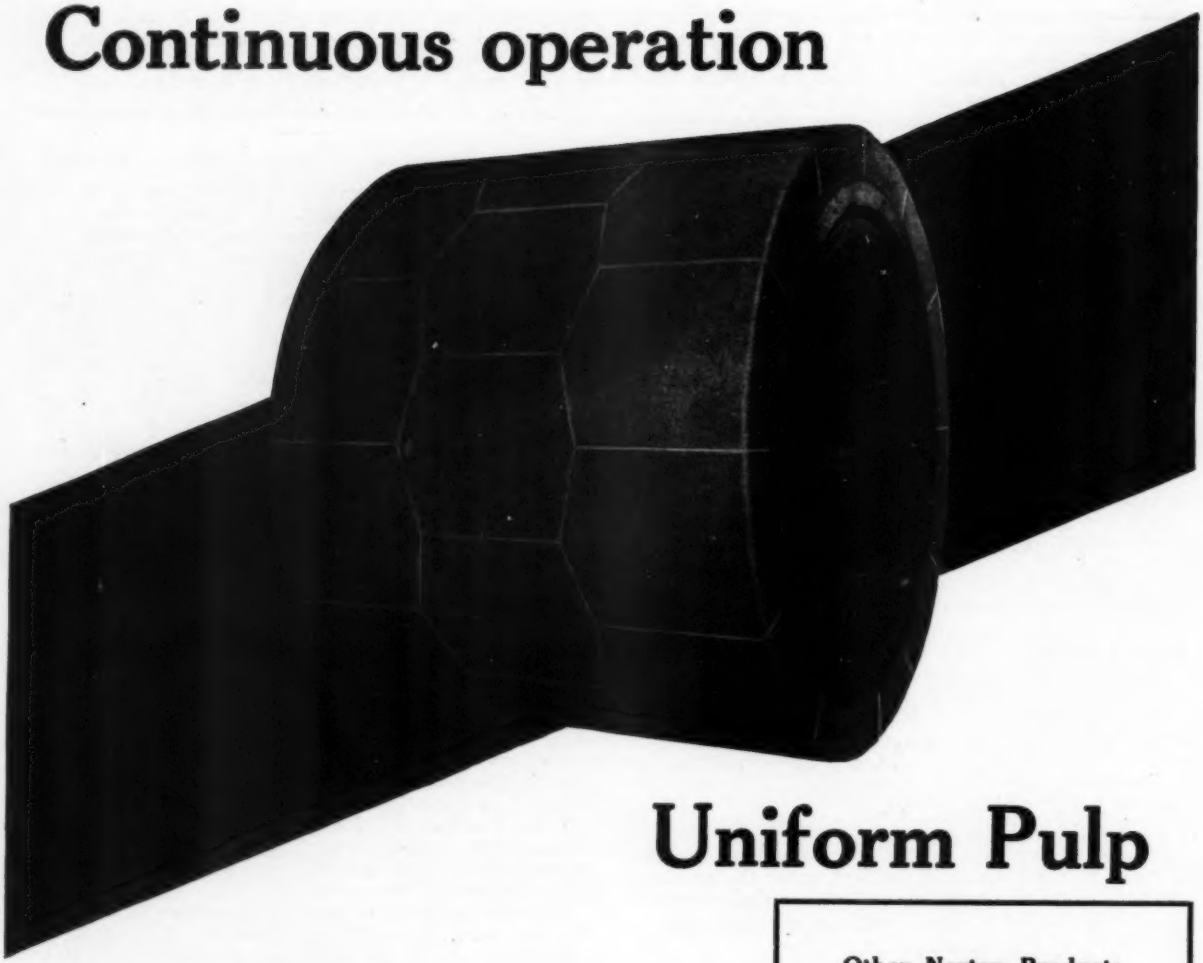
Payment of interest on the 8 per cent general mortgage bonds series A of the Spanish River Pulp and Paper Mills ceased on the first of last month, and the bonds ceased to be part of the financial structure of the new Abitibi organization. The calling of these bonds marked the closing of one more chapter of high-cost financing that was forced upon a number of Canadian industrial organizations in 1920 and 1921, when interest rates reached a peak and the yield on high grade government and municipal bonds exceeded 6.5 per cent.

Output Curtailed at Spanish River

In a readjustment of the workers at the Sault Mills of the Spanish River Pulp and Paper Mills, some 50 men have been laid off, and L. H. Shipman, purchasing agent, and Alf. Gaudet, in charge of the order department, have been transferred to the Abitibi mill at Iroquois Falls.

The changes come in connection with an announced policy of curtailment of output, which is affecting all the mills of

Continuous operation



Uniform Pulp

NORTON PULP STONES were put into service four years ago. They were formally placed on the market two years ago.

During the two years of preliminary experiments and two years of general use in various parts of the country they have become established in the wood pulp industry.

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Refractories for heavy duty

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NORTON
PULP STONES

Canada just now. A reduction of staffs at the Espanola and Sturgeon Falls mills has been effected, and over 100 men have been laid off at the two plants. Production has been decreased for some months, with the full staffs working half time. The present policy is to cut the number of mill workers and employ the remainder at full time. While it is hoped that the lay-off may be temporary, there are no definite indications as to when the mills will be again running to capacity.

Two of the six machines at Espanola are not running, and one small machine was recently shut down at Sturgeon Falls.

It is announced that M. J. Chace Co., New York, holders of $2.000.000 bonds of Spanish River Pulp and Paper Mills, Ltd., have commenced proceedings at Osgood Hall for an injunction restraining the Spanish River Mills, the Abitibi Power and Paper Co., Ltd., and G. T. Clarkson, liquidator of the Spanish River Mills, from taking any steps toward carrying out the proposed sale or transfer of the assets of the Spanish River Mills to the Abitibi Company, toward amalgamation of the two companies, or otherwise acting under the winding up resolution said to have been passed by the Spanish River Pulp and Paper Mills, Ltd., May 30 at Montreal.

Spanish River Mill Damaged

Considerable damage was done recently to the dam and paper mill of the Spanish River Pulp and Paper Mills at Sturgeon Falls, when a wall of water rushing down the Sturgeon River after the breaking of the dam at Martin Lake ran over the dam and flooded a considerable portion of land. Several hundred cords of pulp wood stored along the river above the dam were carried over and swirled away in the river below.

Considerable damage was also done to the mill, the basement of which was flooded to a depth of 1½ feet. The plant was closed down for some time, throwing over 200 men out of employment. An exceptionally heavy flood at the Island Falls hydro-electric power plant of the Abitibi Power and Paper Co., combined with heavy ice which interfered with the opening of the gates, caused the water to rise over the crest of the dam and flood the power house, shutting it down. Interruption in the service was only temporary, and the plant was soon put into commission again.

It is expected that the properties and assets of the Dryden Paper Co., which has been operating under a receivership for the last few years, will shortly be acquired by one of the large Canadian Pulp and Paper groups, Canada Power and Paper Co. being generally mentioned as the most likely purchaser. In this connection, it has been reported that an offer of $60 a share was recently refused by the directors, and it is now rumored that an offer of one and a half shares of Canada Power stock has been made, representing a price of about $75 per share. The improvement in operations of Dryden during the past year is indicated by a report that not only was the company in a position where the receivership was unnecessary, but that a dividend could be declared on the capital stock right away.

Financing Development of China Clay Deposit

It was recently announced that an issue of 100,000 shares of a new company, known as the Northern Ontario China Clay Corp., Ltd., at $10 a share, will shortly be made. The company is the owner of a large deposit of China clay on the east bank of the Mattagami River, about 60 miles North of the main line of the Canadian National Railways. The developing and marketing of the product have been made possible by the building of a private railway line from Kapuskasing to Smoky Falls, which is only eight miles from the clay properties.

The most interesting feature about this far north company will be its by-products. Officials of the company state that there are three main features to the deposit, china clay, silica sand, and a highly refractory fire clay. China clay is used extensively as a coating and filler for paper, and con-

WHY BUY OIL
AND THEN THROW IT AWAY?

What would you think of the man who does that?

"He is crazy," you would say. "He has more money than sense."

Yet that is exactly what is happening every day in a great many plants. They buy oil, put it on bearings, and it immediately runs out onto the floor, onto the machine or on the product, or evaporates. The oil is virtually "thrown away."

The solution is:—use Houghton's Absorbed Oils.

Why?

Because they STAY put.

We have made extensive and intensive investigations and experiments on bearing lubrication and our Absorbed Oils are the result. Two oils in one. One of the oils furnishes film strength. The other furnishes slipperiness. They lubricate with a minimum of waste.

After you have given Houghton's Absorbed Oils a fair test you will find that they not only stay PUT, but they stay BOUGHT.

Write for complete information which will be furnished gladly. Or, have a Houghton Man call to tell you about it.

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The Improved Morse Rocker Joint, Type No. 55

This is the improved design of Morse Rocker Joint which adds even longer life to Morse Silent Chains. Retaining all of the advantages of the old Rocker Joint, this new design provides a better balanced joint with a more nearly round hole for the pins. This means reduced wear and longer chain life.

The contour of the rocker pin has been changed and the cross section of the seat pin has been increased. This gives a more rugged and sturdy joint, 8% heavier, and with an increase of 50% in breaking strength.

Actual tests over a period of years have proved the added reliability and longer life of the type No. 55 Morse Silent Chain. Consult the nearest Morse Transmission Engineer for complete details.

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BUFFALO, N. Y.....Ellicott Square Bldg.
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404 Commercial Bank Bldg.
CHICAGO, ILL.....112 W. Adams St.
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DENVER, COLO..... ....211 Ideal Bldg.
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LOUISVILLE, KY.....516 W. Main St.
E. D. Morton Co.
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D. H. Braymer Equipment Co
PHILADELPHIA, PA. ....20 South 15th St.
PITTSBURGH, PA. ....Westinghouse Bldg.
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Strong-Scott Mfg. Co.
2209

MORSE SILENT CHAIN ←55→ DRIVES

siderable amounts are being imported into Canada for that purpose. The directors of the company claim that their products have been tested and analyzed in the course of the last couple of years and that they have been found to compare favorably in purity and quality with the best imported grades.

Abitibi Issues New Stock

A banking group headed by the National City Co., and including Wood, Gundy & Co., Royal Securities Corp., Peabody, Houghteling & Co., and Peabody, Smith and Co., recently offered at $102 a share an additional issue of $10,000,000 Abitibi Power and Paper Co. 6 per cent cumulative preferred stock of $100 par value. The proceeds from the sale of this stock will be used solely to retire certain funded indebtedness and preferred stocks of subsidiaries preliminary to the issuance of mortgage bonds to refund all other funded indebtedness at a substantial saving in annual interest and dividend requirements.

Based on a pro forma consolidated balance sheet as of December 31 last, after giving effect to this financing and other adjustments, the company with its subsidiaries showed net tangible assets of more than $100,000,000 after deducting all liabilities including funded debt and all prior securities, as compared with $34,976,400 par value of 6 per cent cumulative preferred stock.

Fred J. Hunt has been appointed mill representative in Toronto of the Georgetown Coated Paper Co., with offices at 407 Kent Building. Mr. Hunt, who succeeds the late Paul Fleck, was for some years connected with the sales staff of Kilgour's, Ltd., paper box manufacturers, Toronto, and is widely known in paper circles in Ontario.

In addition to the regular retirement of their gold bonds, the Inter-lake Tissue Mills, of Toronto, have arranged to retire a substantial lot on August 1st next. The company, which has its mill at Thorold where it manufactures tissues and toilets, has made remarkable progress during the past few years, and is now a leader in this branch of the paper business in Canada.

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, recently presented the Garden City Mills with the shield and flag for the best safety record of Class B mills in 1927. The mill experienced only one accident in 1927, involving but five days' lost time, which was equivalent to 0.42 day's lost time per 1000 hours' exposure to hazard.

Owing to the unwatering of the old Well and Canal for the annual repairs, the Thorold Division of Provincial Paper was closed down about a week last month.

BRITISH COLUMBIA

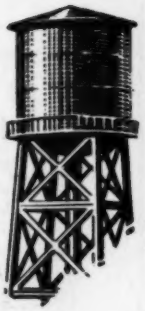
Bright Prospects for Poplar Island Mill

Business men of Vancouver have subscribed $100,000 towards the project of Senator Charles G. Heifner of Seattle, Wash., to establish a pulp mill on Poplar Island. Senator Heifner, who has been quietly working on the scheme since it was first introduced, was in New Westminster a short time ago, discussing his plans with local parties interested in the project.

The $100,000 raised in Vancouver was obtained with comparatively little effort and those contributing include some very prominent business. One subscription for $15,000 was obtained in addition to quite a number for $10,000, and there are certain prospects that an additional $50,000 can be raised in Vancouver.

The New Westminster Paper Mills, New Westminster, specializing in tissue fruit wrappers, is at present enjoying

How much water is in the tank ?



How do you know in your own plant?

Do you have an old fashioned gauge with a float and pulley rigged up in the tank that requires someone to go outside and look, or do you guess at it?

By installing a Foxboro Liquid Level Recorder in the tank you can know at all times just how much water there is, how much you use and how fast you are using it. The recorder can be installed at any convenient place above or below the tank.

When the superintendent has this continuous record right in front of him, water shortage and water waste will be a thing of the past. Think of the worry that will take off your mind. This instrument also furnishes vital records of liquid levels in the forebay, tail race, beater chest, etc.

Let us send complete information.

Like all Foxboro Instruments, the Foxboro Liquid Level gauge has a sealed guarantee that the instrument will do exactly what we claim it will.

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INSTRUMENTS FOR CONTROLLING, RECORDING AND INDICATING TEMPERATURE, FLOW, HUMIDITY AND PRESSURE.

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(Built in two sizes)

The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

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a particularly busy period. Mot of this activity is due to increased export business, in New Zealand and Australia particularly, where unusually large fruit harvests and improved market conditions are causing the demand for wrappers. In the antipodes, the harvest seasons are the exact reverse of what they are in the northern hemisphere, so that the present time is usually the off-season for the British Columbia mill.

Encroachment of pulp and paper and power interests on fishing streams of British Columbia constitute a grave menace in the opinion of the federal government, according to a report from Vancouver. Concern has been stimulated by the situation which has arisen over the scheme project for the Nimpkish River, where it is proposed to erect a 200-foot dam to harness the power required for a pulp and paper mill. The application for this project has already been granted by the provincial government despite the protests of fishermen and fisheries officials who claimed it would ruin the valuable salmon run there. The annual production of fish in the Nimpkish area alone is worth $1,500,000. This will be wiped out if the dam is built, fishermen contend. Several other power projects are now receiving the consideration of the government.

Premier J. D. MacLean has announced that in order to ensure perpetuity of timber supply to the province there will soon be held in reserve 25,000,000 acres of forest land. In order to provide funds to properly care for the reserves, in which cutting will be forbidden for a term of years, a fund has been established equal to 3 per cent of the revenue obtained from royalties and stumpage, or about $100,000 yearly.

NEW BRUNSWICK

Lumbermen's Association Re-organized

In accordance with a motion made a year ago, the New Brunswick Lumbermen's Association has changed its name to the New Brunswick Forest Products Association. The hardwood manufacturers, who hitherto had been unorganized, were organized into a distinct branch of the association. Pulp and paper men and pulpwood operators now also form part of the rejuvenated organization.

At a recently held meeting C. W. Alden of St. John was re-elected president, J. W. Brankley of Chatham vice-president, and W. E. Anderson of St. John secretary. A committee was appointed to further deal with representations of the association regarding the putting into effect of the recommendations of the Duncan Report in the matter of freight rates reduction.

Pending the settlement of the disputed tax question, installation of the new machine at Bathurst has been suspended. The Supreme Court of New Brunswick handed down a judgment some time ago finding that the company was liable for school taxes for the full amount of its valuation; but appeal has been entered in the Supreme Court of Canada, and until the matter is adjusted to the company's satisfaction work will be suspended.

The Eastern Pulpwood Co. is constructing a number of buildings at St. Croix, on the bank of the St. Croix River. The structures include a hotel, for accommodation of the employees, stable and storehouse.

The Eastern Manufacturing Co., operating pulp and paper mills at South Brewer and Lincoln, Me., recently purchased barking machines from the Smith Foundry Co. of Fredericton, and these are now in use barking about 35 cords daily.

It is reported that International Paper Co. has secured options on about 100 acres of land near St. Leonard, almost directly across the St. John River from the Keegan, Maine, mill owned by the Aroostook Pulp and Paper Co., a subsidiary

Dawn of the
Great Future Market
For The Paper Industry

Wall Paper, through compelling color effects and richly embossed surfaces, now wrests a gigantic market from the most energetic campaigns for painted walls. The future for box papers, utility wraps, linings and individual servers never looked brighter. BEAUTY—in everything made of paper—is the element that is building a new era for the paper industry—just as it has already done for many other industries. Are you preparing to get your share of this profitable market?

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Since 1827 Waldron has kept pace with the developments in Paper Converting. The most intricate problems in processing and production have been solved—the most original effects made possible—with machinery designed and built by Waldron.

If it is made of paper—from napkins to floor covering—there's a Waldron machine for every step in the processing. Write for a copy of—"Converting of Light Weight Papers"—timely valuable information for men with an eye on the future.

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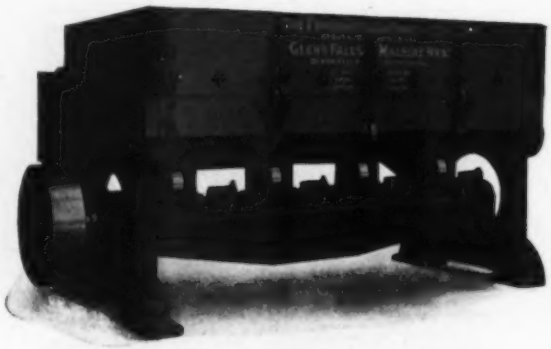

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ROLLER SHOE FLAT SCREEN

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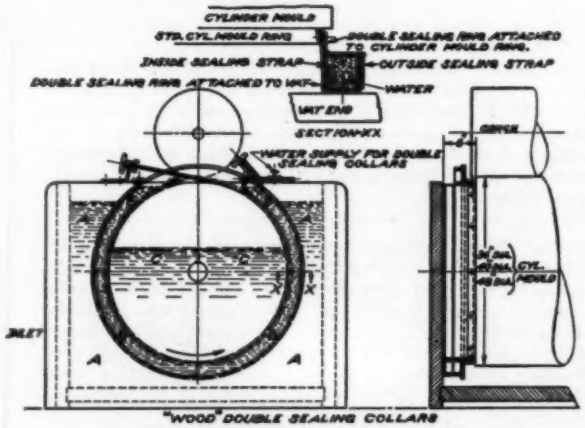
A. D. WOOD

DOUBLE SEALING COLLAR

(Patent Applied For)



"WOOD" DOUBLE SEALING COLLARS
USED ON DECKERS, WET MACHINES, ETC.

GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

Waterous Ltd., Brantford, Ont. Manufacturing Agent

E. K. Mansfield Co., 501 Fifth Ave., N. Y. C.
Eastern Representative

Western Representative
Woodbury & Wheeler Co., 55 Second St.,
Portland, Ore.

See pages 342 and 343 in the 1927 Paper and Pulp Mill Catalogue

of International Paper, and which has not been operated for the last two years. It is stated that International proposes to build groundwood and sulphite mills at the St. Leonard site and to pump the pulp across the river by means of a pipe line similar to that employed by the Fraser Companies between their Edmundston, N. B., pulp mill and Madawaska, Maine, paper mill; and the pulp would be manufactured into paper at the Keegan mill, which is to be rehabiliatated.

MANITOBA

One of the largest United States manufacturers of paper bags used in the cement industry is likely to locate in Winnipeg shortly, according to information received by the Industrial Development Board. Officials of the company were in Winnipeg a short time ago consulting with the board as to the suitability of this location, and there is strong likelihood of their approving it.

Merger of Western Paper Box Companies

Dominion Envelope and Cartons, Ltd., has recently acquired control of the Hitchings Paper Box Co., Winnipeg, the Winnipeg Paper Box Co., Winnipeg, and the Dominion Carton and Printing Works, Edmonton, Alta. The new company, with head offices in Winnipeg, will be known as Dominion Envelope and Cartons (Western), Ltd.

A reinforced concrete building of 80,000 square feet has been purchased in Winnipeg, and a new building is to be erected in Edmonton. The Hitchings Paper Box Co. and the Winnipeg Paper Box Co., both of which have already separate buildings, will be moved into the newly acquired building.

These three companies are the only carton manufacturers in the Prairie Provinces, and will give considerable additional boxboard tonnage to the Dominion Boxboards of Toronto, which is just completing erection of a new mill on the harbor front at Toronto and which is owned and operated by Dominion Envelope and Cartons, Ltd., Toronto.

NOVA SCOTIA

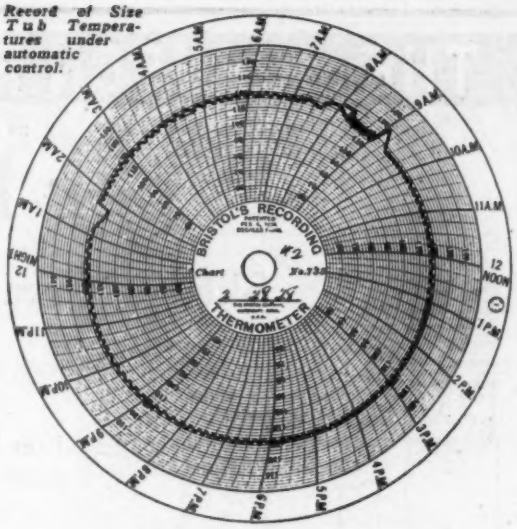
Experiments in the manufacture of groundwood are in progress at the Charleston mill of the Nova Scotia Pulp and Paper Co., a subsidiary of the Scott Paper Co. The aim of the experiments is to produce a commercial paper superior to the grades now in use. Thus far, the tests are reported to have been very satisfactory to the officials, with indications for complete results by the close of this year. Considerable interest in the tests is being manifested by the officers of the Scott Paper Co. It is said that the results may revolutionize groundwood manufacture.

German Paper Mills Increase Production

German paper and board mills report an output of 521,931 metric tons of paper and 108,171 tons of boards during the first three months of the current year as against 474,243 tons and 101,557 tons, respectively, during the corresponding three months last year, according to the Paper Division, Department of Commerce. The favorable conditions prevailing in the German paper industry are reflected in the increased dividends, according to reports from a number of leading paper companies.

Newsprint production, amounting to 122,734 tons, constituted the largest item in this year's output, followed by other printing and writing papers with a mechanical groundwood content, amounting to 92,640 tons, wrapping paper (exclusive of greaseproof and imitation parchments) amounting to 53,623 tons, and wood-free printings and writings to the amount of 41,419 tons.

The Buffalo Foundry & Machine Co., Buffalo, N. Y., has opened a San Francisco office in charge of Charles O. Lavett.

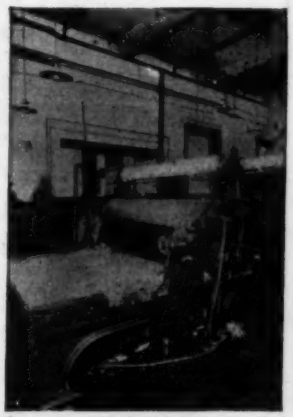


Record of Size Tub Temperatures under automatic control.

BRISTOL'S

Temperature Control Equipment automatically controls size tub temperatures.

OPERATING to control the flow of steam used in heating the size tub, Bristol's Thermometer Thermostat Controller acting together with Bristol's Motor Operated Controller Valve, continuously maintains a uniform temperature. The chart record reproduced above shows the closeness of control secured over a 24-hour period.


Size tub with control equipment in background.

It is readily evident, that with this equipment there is no chance for neglect in the regulation of heat, such as might be possible under manual direction. Also, as the correct consistency of size liquid is maintained at all times, the uniform treatment of paper passed through the tub is assured.

Bristol's Control Panel.

For more complete information about this and other control installations adaptable for Paper Mill processes, consult our Engineering Service. There's no obligation.

The Bristol Company

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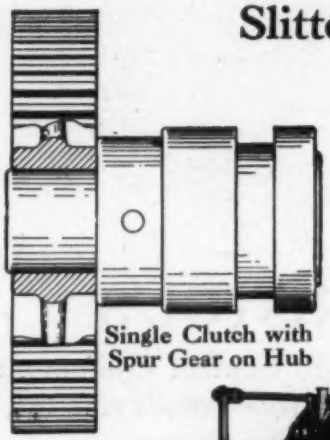
THE JOHNSON FRICTION CLUTCH

as used in the

Paper Industry

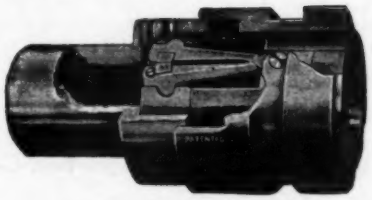
on

Slitters, Creasers & Slotters

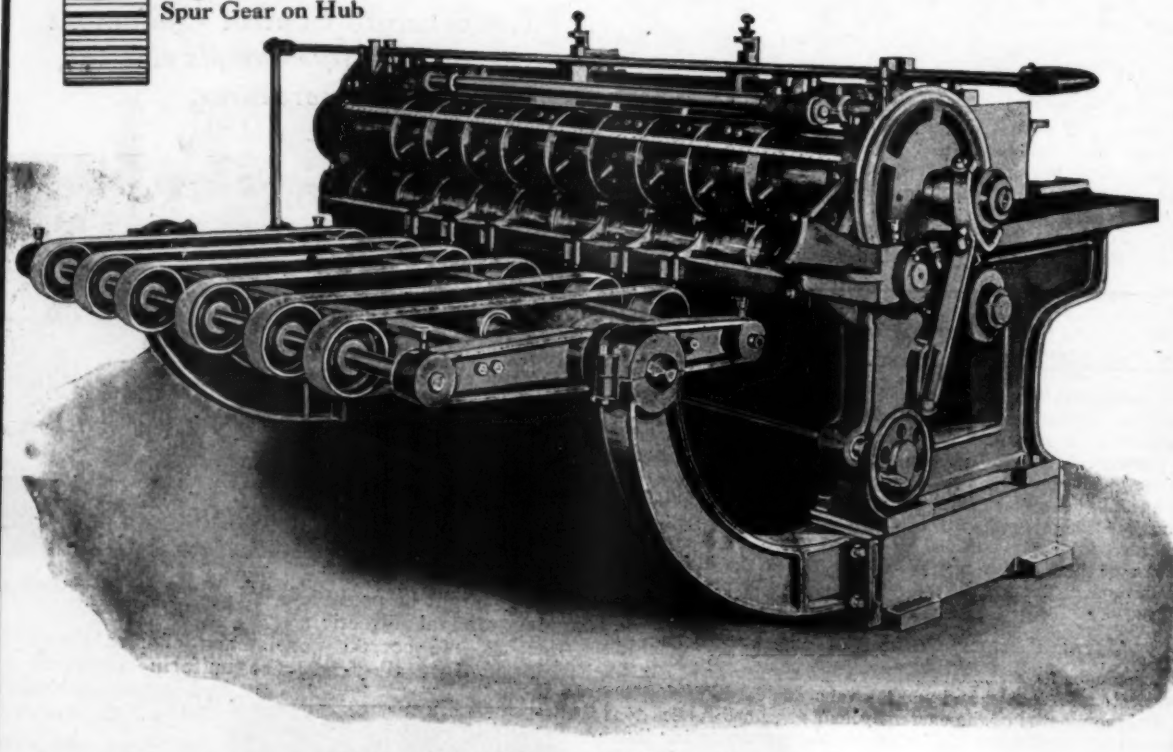


Single Clutch with Spur Gear on Hub

Used on Four Types of Langston Machines



Single Clutch Showing Working Parts



Rotary, Slitter, Creaser & Slotter, Type V. L.
COURTESY: The Samuel M. Langston Co., Camden, N. J.

On this paper machine a Johnson single friction clutch on the cutter shafts speeds up the registering of the slotting heads and the feed. In more than a dozen ways Johnsons improve paper machines. Equip with Johnsons.

Full data upon request. Write for Catalog "P. I."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

BRITISH CORRESPONDENCE

Paper Trade Conditions

Board of Trade figures indicate that paper exports are down to the extent of 4876 tons, and that raw material imports are lower than last year by 100,000 tons. The main cause for the huge drop in exports is the slump in the Australian purchase of British paper. This year, 7,000 tons fewer have been sent to the Commonwealth than during the same period last year. During the month of March alone, there was a drop in exports to Australia of over 4,000 tons. In the same period, imports of paper increased by nearly 3,000 tons. Imports of wrapping paper, however, still show a decline, the past three months figures being 1,342 tons fewer than last year. Printing and writing papers, cardboards and strawboards still continue on the increase.

From these figures it would appear that the British paper industry is losing ground rapidly; but actually except for diminished newsprint sales to Australia and to some extent to New Zealand, the ground has been securely held. An improvement has been noted in our exports of other classes of paper, and in our trade in newsprint elsewhere than in the Commonwealth and New Zealand.

The greatest amount of activity is found among the wrapping mills, and there is an increased demand for kraft wrappings, and good brands are being turned out at prices lower than foreign quotations. Conditions in newsprint mills are moderately satisfactory; but foreign competition is keen. Woodfree makers are reducing their prices slightly, a step which is expected to strengthen them against foreign competition, and help to balance the advantage held by esparto papers.

In the fine paper business, the larger firms seem to secure the pick of the business. Prices remain stable. It is two years since the Safeguarding of Industries Act was extended to include wrapping papers of all kinds in substance heavier than 10 lbs, 20 by 30, with a few exceptions such as greaseproof and vegetable parchment. This import duty of twopence in the shilling ad valorem has been in force sufficiently long to enable its results to be judged on their merits. Certain classes of wrappings were more quickly affected than others. Imitation krafts and other papers closely allied to these were among the first to feel the effect of the restrictive power of a duty of 16⅓ per cent. Many British mills could make these medium class wrappings, and the duty at once enabled them to secure orders which formerly went to foreign competitors.

One of the arguments put forward by British paper makers when asking for the imposition of the duty was that owing to the dumping methods of their Continental competitors they were unable to get orders either sufficiently large or in sufficient quantity to enable them to run their mills at a profit. These claims appear to have been well founded, for whereas orders were formerly for single tons, they are now able to make steady runs of ten tons or more without stopping. This economy of working has enabled them to lower prices, and at the same time to make a reasonable profit for their shareholders.

There is a move among paper makers towards more extensive advertising, although the attitude is still one of hesitancy. But that certain progress has been made is evidenced by the fact that six months ago the advertising pages of one well-known trade journal contained seventy-five per cent of advertisements from foreign paper makers and merchants, and only 25 per cent from British mills, while shortly after the commencement of this year the proportion was altered to 60 per cent British and 40 per cent foreign. Before advertising can be generally adopted, however, the whole system of marketing and selling must be drastically changed. At present the strong position occupied by the paper merchant houses precludes any rapid development on the part of general advertising to consumers by manufacturers.

Take Steps to Preserve Manuscripts

Following the article entitled "Publications Using Inferior

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON Inc.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

WHAT A JOBBER THINKS OF BELT DRESSINGS

Wheeling, W. Va.
Feb. 14, 1927.

We do not remember how many years we have been selling STEPHENSON BAR BELT DRESSING, but it must be at least twenty, and to the best of our recollection we have never had a complaint regarding it. The fact that we have repeat orders from customers who have been using it for years is sufficient evidence that it is a dependable product for the purpose for which it is intended.

Yours very truly,
THE CHAS. H. BERRY SUPPLY CO.
WHEELING, W. VA.

Ask your Jobber or

Stephenson Mfg. Co.
Albany, N. Y.

Stephenson Mfg. Co., Albany, N. Y.
Send Free Sample.

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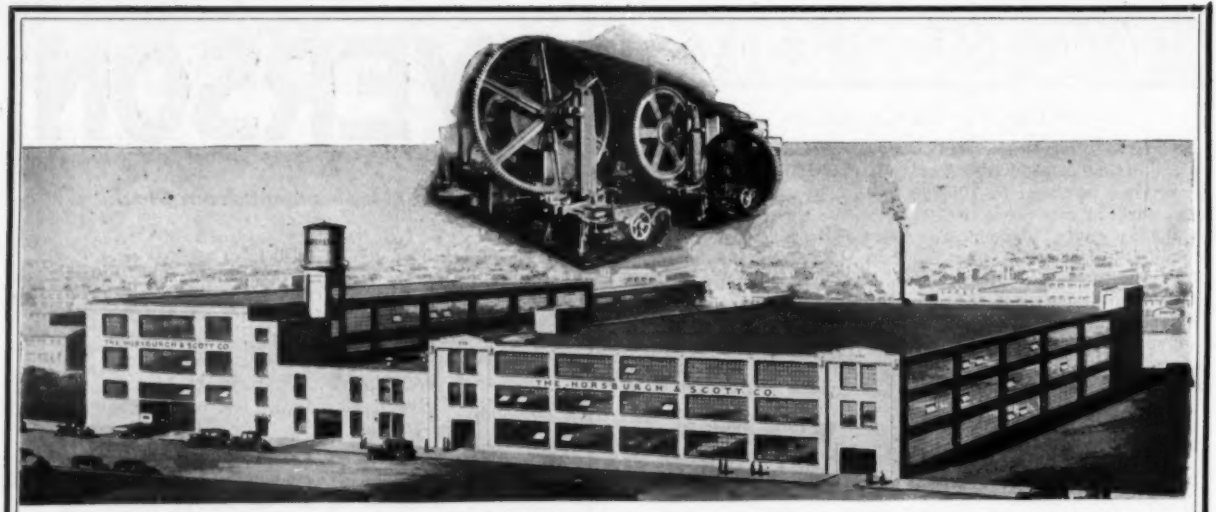
P.I.

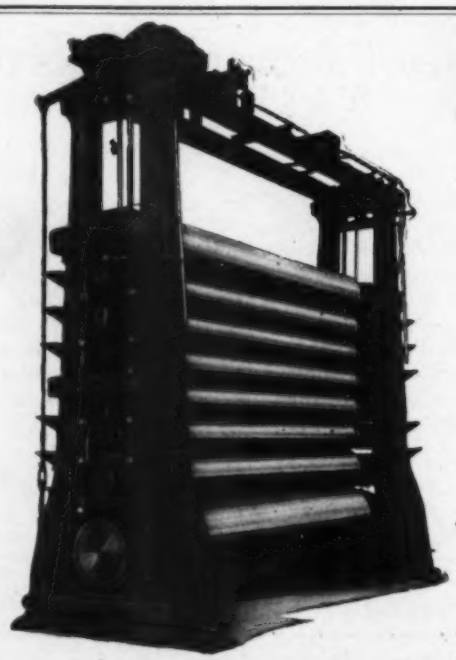


Gears and Speed Reducers

The Horsburgh & Scott Co.

5114 Hamilton Ave. *"Gear Makers Since '89"* Cleveland, U. S. A.

Gears for Every Industrial Purpose—Worm—Bevel—Herringbone—Spur—Spiral—Hardened Heat Treated Gears —Non Metallic Gears and Pinions



LOBDELL

CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

Quality of Paper," which appeared in this column of the April issue of THE PAPER INDUSTRY, it is interesting to read the report of the Committee of International Experts which met in Paris to discuss this question of the deterioration of printed papers and manuscripts, and the best means to be taken for their preservation. Their report is to be presented to the League of Nations for its approval, and subsequently to be transmitted to the governments there represented.

The Committee recommends that the attention of governments be drawn to the necessity for using for documents of permanent value, and especially for those of an official value only, papers made according to the following specifications:

(a) A preference at the present state of manufacturing process to be given to unbleached rag paper; it being understood that new processes of treating cellulose may in the future provide paper of lasting quality.

(b) All noxious effects arising from coloring matter, filling and size, and also from acidity to be avoided.

(c) Standards for the strength of paper to be established.

(d) All paper to be watermarked with a watermark containing the name of the manufacturer and the specification.

The Committee recommend that, for the time being, the best ferro-tanate inks should be used for printing. They also suggest that, as for some time past certain British and American newspapers have printed special editions on all-rag papers, it is desirable that this example should be followed in all countries.

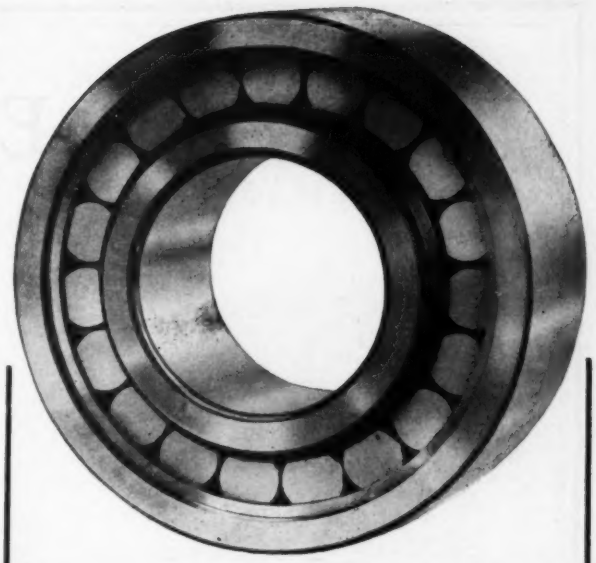
In connection with these recommendations, a trade authority in this country has pointed out that if all newspaper proprietors are to be called upon to print a special small edition —an exact reproduction of the main edition—on paper made from pure rag, so that museums and libraries and others whose duty it is to keep public records may be sure that what they bind and store away for future reference will be there when wanted, this will mean a considerable amount of trouble for the machine departments of the newspapers concerned, to say nothing of the expense. The only way of getting copies that will last for centuries, however, is to have them printed upon paper made from pure white rags. It is suggested that some arrangements may be made whereby the flat type forms could be put upon a flat-bed machine after the moulds for casting the plates used for the ordinary editions have been taken.

New Pulp Mill for Norway

British interests on the Continent are further increased by the formation of The Standard Wood Pulp Co., Ltd., to acquire the share capital of a Norwegian business of mechanical wood pulp manufacturers and merchants. The works and property of the company are situated at Risor, on the south-east coast of Norway, and include a pulp mill of modern design and lay-out. It is pointed out in the public prospectus that the importance of wood pulp for paper manufacture cannot be over-estimated, and that the enormous increase in newspapers and other periodicals has produced a demand for wood-pulp which is practically unlimited. In particular there is a demand for white pine which abounds in Scandinavia, a type of raw material which is presumably handled by that company.

The Kennedy Valve Manufacturing Co., Elmira, N. Y., announces the election of Matthew E. Kennedy as president and treasurer; J. Carroll Kennedy as vice president and secretary and Clarence H. Kennedy as vice president and general sales manager. These officials are all sons of the late Danield Kennedy who founded the business over fifty years ago and was president until his death last January.

Announcement is made that the Lyon Metal Products, Inc., Aurora, Ill., has purchased the Durand Steel Locker Co., Chicago Heights, Ill., and the Lyon Metallic Manufacturing Co., Aurora, Ill. The new organization will be directed by the officers of the old companies. The distributors of products made by the larger company can assume greater merchandising and selling aggressiveness than the larger company can assume.



ROLLWAY CYLINDRICAL ROLLER BEARINGS

Two New Types

for Extra Heavy Service

Rollway "Maximum Wide" and "Maximum Wide Floating" Radial Bearings are logical developments of the Rollway Type MDW which has proved so successful in heavy duty applications. These two new types, described and listed in Rollway Bulletin No. 59, meet two distinct needs, first, for a bearing with even greater capacity than type MDW, with ability to locate the shaft axially; and second, for a bearing with liberal internal axial float.

These bearings are interchangeable with equivalent sizes of double row ball bearings and taper roller bearings. The floating bearings (Type MF) are particularly useful in applications where a reasonable amount of end play is desirable or necessary.

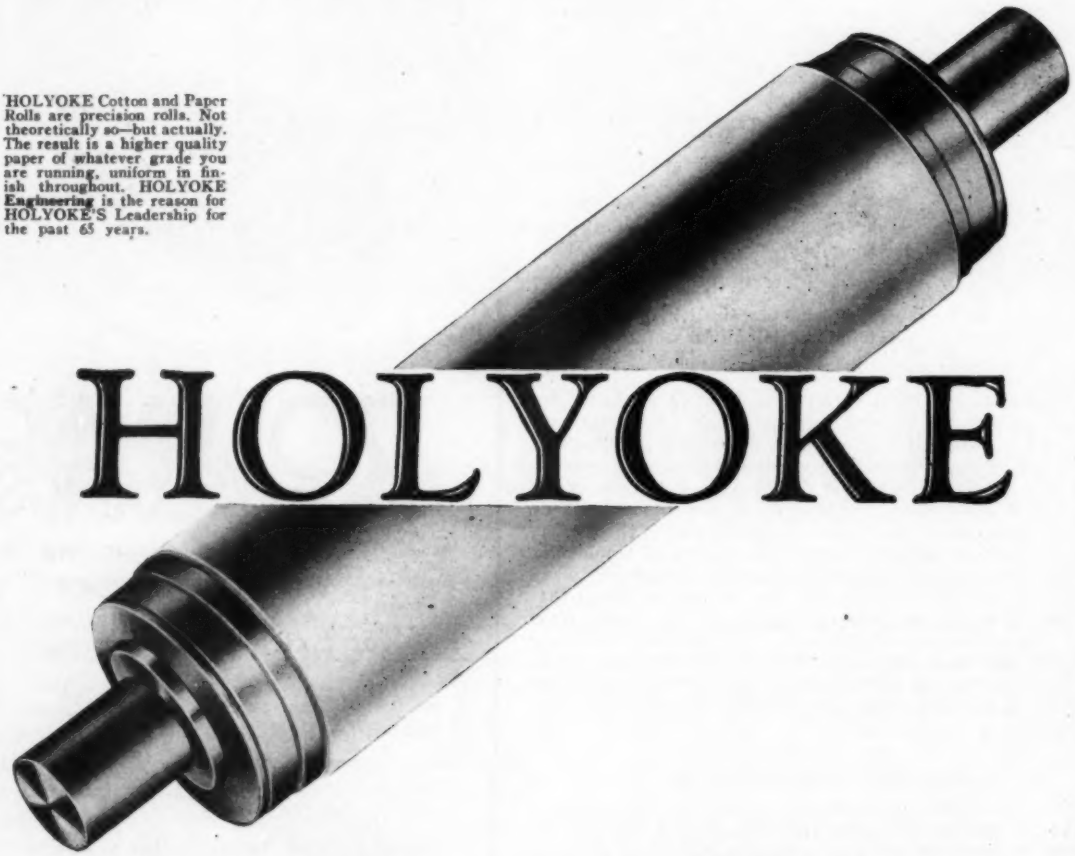
Send for Bulletin No. 59, or ask our Engineers to recommend bearings to fit your needs.

Rollway Bearing Co., Inc.

Syracuse, N. Y.

LEADERSHIP

HOLYOKE Cotton and Paper Rolls are precision rolls. Not theoretically so—but actually. The result is a higher quality paper of whatever grade you are running, uniform in finish throughout. HOLYOKE Engineering is the reason for HOLYOKE'S Leadership for the past 65 years.



HOLYOKE

HOLYOKE and HOLYOKE MACHINE COMPANY form a guarantee of Superior Workmanship and Performance. Long Engineering experience has built unquestioned excellence into every HOLYOKE MACHINE. HOLYOKE'S Precision finish, rugged construction, and fewer repairs make HOLYOKE Rolls the best buy for the long run and the perfect run.

Write HOLYOKE MACHINE COMPANY, HOLYOKE, MASS., Maufacturers of Super Calenders, Platers, Cotton, and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

NEW ENGLAND NEWS

Eaton, Crane & Pike Buy Berkshire Plant

The big news of the past month in New England was the kaleidescopic changes effected within a week's time at Pittsfield, Mass., where the Berkshire Hills Paper Co. finally landed in the laps of Eaton, Crane & Pike, nationally known converters and papetrie manufacturers of Pittsfield. The mill had been in receivers' hands for nine months and was showing up rather poorly insofar as there being any prospect of clearing up the indebtedness. The plant was equipped to make tissues and bond papers with machinery for the specialty production of loose leaf stock. By order of the court, the mill was offered for public auction. Although its total property was carried on its books at approximately a million dollars, it was admittedly worth but a fraction of that price.

Henry J. Guild, until recently vice president of the Eastern Manufacturing Co., bid the property in at $75,000. Immediately thereafter it became known that his purchase was made for the account of the Pittsfield converters. A new company was formed called the Eaton Paper Co., and incorporated under Massachusetts laws. Arthur W. Eaton, chairman of Eaton, Crane & Pike, became president. Col. William H. Eaton, vice president and treasurer, Mr. Guild, vice president and general manager, John R. Tobey, assistant treasurer and Alexander Simpson, director. Immediately at was announced that the Eaton Paper Co. would make paper for Eaton, Crane & Pike which was formerly made at the Eastern Mfg. Co.'s Katahdin division at Lincoln, Me. It is reported in the trade that the Pittsfield company's order at Lincoln amounted to about a million dollars annually.

Subsequently it also became known that George Verow had resigned his position as superintendent at Lincoln and would become connected with the Adams manufacturers. It is known that this entry of Eaton, Crane & Pike into the manufacturing field in no way affects their relations or their purchase of paper from the Cranes of Dalton, Mass. It had been hoped for some time prior to the sale that the old Berkshire Hills Paper Co. organization could be continued but the bondholders were unable to effect a satisfactory adjustment that would raise the required capital.

Developments by Arthur D. Little, Inc.

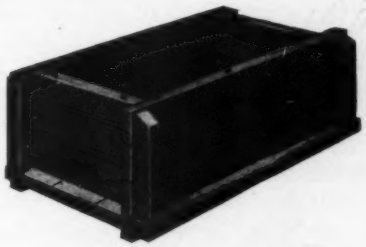
Arthur D. Little, Inc., chemists, engineers, and experimenters in processes of paper and pulp manufacture, have developed a semi-chemical pulp using either or both northern or southern hardwoods from which a hard, stiff, waterproof board has been developed which is highly suited according to the Little organization for insulating purposes. Patents have been applied for and the company hopes to announce fuller details concerning its process at a later date. It has been in development for the past three years.

It will be recalled that the Arthur D. Little organization brought on the market over a year ago, a new process for making newsprint paper from southern gumwood and pine. The method involved an agglutinin which overcame the obstacles encountered in the use of the gumwood. This process was patented, but its introduction to the market was withheld owing to the low price of newsprint. It is explained by the Little managers that the use of their gumwood process is designed for the South, but with Canadian and Northern American mills offering news delivered at prices which are little if any higher than Northern delivered quotations, the time for its application is in the future.

W. F. Goldsmith has taken direct charge of the recent experimentation which resulted in the new insulating board from hardwoods. C. C. Carpenter, formerly in charge of paper experimentation for Arthur D. Little, Inc., is now with the Container Corporation of America. The Little organization continues to manage and operate the Windsor Locks Mills, Inc., at Windsor Locks, Conn. The product consists chiefly of lightweight kraft and specialties.

A highly practical bit of machine shop equipment has been adopted by the Great Northern Paper Co. at its Greenville

CYPRESS TANKS



For more than seventy five years Cypress has been our chief product and specialty.

Cypress is free from taint, taste or odor, and from the effects of cold, of heat and of decomposition by galvanic action. It is therefore used by us extensively in the manufacture of our Dye Tubs, Vats, Stave Pipe and Wood Tanks of All Kinds.

While we specialize in Cypress tanks we also manufacture a great many of Western Fir, Eastern White Pine, Oak, Long Leaf Yellow Pine, and other woods.

Our engineering department will gladly assist and advise concerning your tank problems.

Send for our Tank Catalog.

The A. T. Stearns Lumber Co.
NEPONSET, BOSTON, MASS.
STEARNS TANKS

BOLTON QUALITY

JOHN W. BOLTON & SONS, INC.
Eagle Knife & Bar Works
LAWRENCE, MASS.

The only firm making KNIVES for every machine
from wood pile to finishing room.

HIGH GRADE KNIVES, BARS, PLATES AND JORDAN FILLINGS
ALL GRADES STEEL OR BRONZE KNIVES
IT'S the KNIVES that do the work!

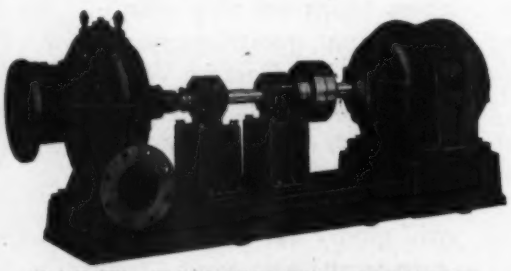
THE WATERBURY FELT CO.
SKANEATELES FALLS
New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

LAWRENCE
"VORTEX" CENTRIFUGAL PUMPS
—Built For Every Need in the Paper Industry—



DAY IN—DAY OUT PERFORMANCE
THAT'S WHAT COUNTS

A NON-CLOGGING PUMP that will handle your stock of high consistencies with unusual efficiency. Delivers a steady flow of stock faster, more efficiently, will not clog, and requires no attention.

Rugged construction throughout. Heavy shaft. Oversize heavy duty Ball Bearings guarantee long life with least attention.

Our Engineers are always ready to help you with pumping problems. Write for Bulletins.

Lawrence Pump & Engine Co.
P. O. BOX 70,
LAWRENCE, MASS.
N. Y. Office—90 West St.

Fig. 720, screw, Jenkins Bronze Rapid Action Valve, find many applications in industry.

When split-seconds count!

There are many places in steam, air and water lines where quick "on-and-off" action is desired —where split-seconds count.

Jenkins Rapid Action Valves are built for such service. A short pull of the hand lever and the valve is wide open.

Then, too, this valve stays open automatically without set screws or locking devices. Moreover, water hammer is avoided by regulation of the closing of the disc on the seat.

Equipped with Jenkins renewable disc, marked with the Jenkins Diamond, these valves can be relied on to give typical, long-term Jenkins service.

Folder 70-A is the one to ask for.

JENKINS BROS.
80 White Street .....New York, N. Y.
524 Atlantic Avenue .....Boston, Mass.
133 No. Seventh Street .....Philadelphia, Pa.
646 Washington Boulevard.....Chicago, Ill.
JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

shop in the form of a Lincoln stable arc welder, 400 ampere size, powered with a four cylinder motor. The welder has been mounted on a four wheel army trailer and boxes. As it is portable and able to generate its own power, it can be taken anywhere over the Great Northern's system of highways to the various operations.

Extension of the fire patrol system of the Maine Forestry Department has obviated the necessity for fire patrols by some of the leading paper companies. Great Northern Paper Co. has decided to discontinue the practice of operating its own fire patrols. There are 44 wardens under the supervision of a district chief in the Moosehead Lake region, where Great Northern owns or has stumpage rights to over a million acres.

Hollingsworth & Whitney Co. and Great Northern Paper Co. were able to save a considerable portion of their log drives on the Kennebec River that were washed away from booms when floodwaters rose around May 25th. Hastily constructed booms at Brown Island between Gardiner and Hallowell caught a considerable portion of the timber.

The Waterproof Paper Co., of Boston which it is understood will manufacture waterproof building and wrapping papers has been incorporated with $150,000. The officers are Albert F. Schenkelberger of Cambridge, president; Robert C. Schwab of Brookline, treasurer.

Threatening labor troubles in the plant of the Falulah Paper Co., Fitchburg, Mass., were quickly settled by Joseph A. Lowe secretary treasurer of the Company, who is also Mayor of Fitchburg. A strike had been called while Mr. Lowe was on his honeymoon because of a reduction in the bonus scale of 5 per cent. The company has had a bonus system in operation in addition to the regular wage scale for some 15 years. Efficiency engineers advised the changes which caused the trouble. Bonuses are based on the production of each department with a basis wage of 75c per hour. The men particularly affected were in the coating and finishing department as the new arrangement would make a 15 per cent bonus applicable throughout the plant, whereas some of the employees in the finishing division had received 60 per cent. The new plan was finally adopted subject to later revision.

John H. Smith, oldest member in point of service in Bird & Son's Olt Timer's Club, has been granted a six weeks' vacation trip to Europe for himself and Mrs. Smith in commemoration of 50 years of service to the company. Mr. Smith is general yard foreman.

Braver Healey & Co., waste paper dealers at 75 Conant St., Boston, Mass., suffered a loss by fire on June 1st.

Imports of provincial pulpwood through Portland will break all records this year according to estimates at the Maine city where it is predicted that imports will total 120,000 cords. Of this, Hollingsworth & Whitney Co. will bring in about 50,000 cords, International Paper Co., about 30,000, Oxford Paper Co., 30,000 and S. D. Warren Co., 10,000.

Work is proceeding rapidly on the new central steam power plant which is to be equipped to turn from powdered coal to oil within a few hours or vice versa, and which will supply steam to all the plants of Crocker Burbank Co., of Fitchburg, Mass.

Mr. and Mrs. Alexander Phillips of the London firm of S. Sternburg, manufacturers of fourdrinier wires, have been the guests of Mr. George M. Graves, paper mill supply importer of 77 Summer street, Boston. Mr. Phillips accompanied Mr. Graves on a tour of the Northern New England paper mills during the past months.

George Olmstead, vice president of the S. D. Warren Co., spoke before the annual out of town meeting of the New Eng-

In the Dill and Collins Plant

The Entire Stack
Butterworth Calender Rolls

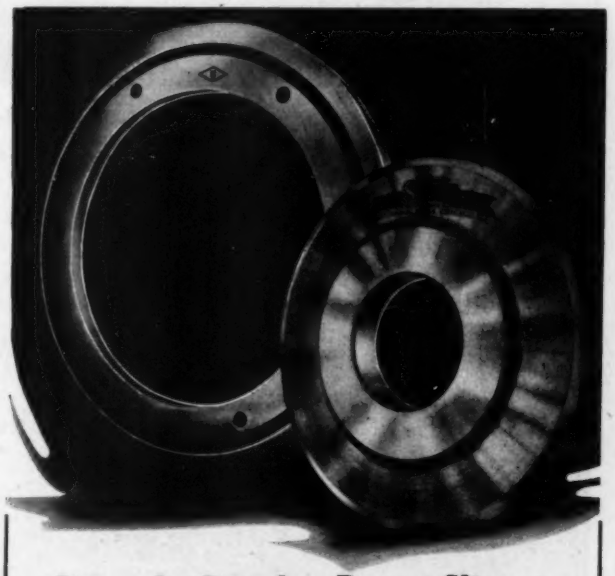
"The rolls have long life"
wrote Wm. R. Maull, Manager

Literature as to why Butterworth Calender Rolls are better is available and will be sent promptly upon request.

H. W. BUTTERWORTH & SONS CO.

Established 1820

Plants at Philadelphia and Bethayres, Pa.



Simonds Circular Paper Slitters

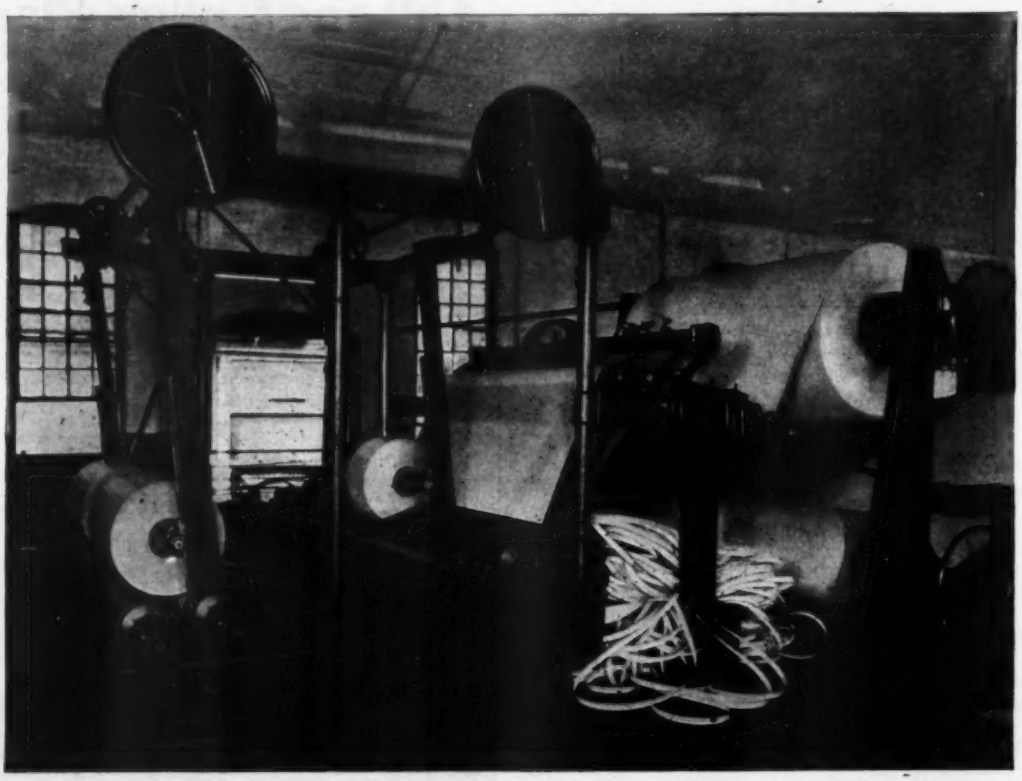
Edge-holding—that explains why mills in every section are turning to SIMONDS for the Circular Slitters that give them better work and more production. Simonds Slitters are true to form and perfect mechanically.

Order them from any Simonds factory or service station.

Simonds Saw and Steel Company
ESTABLISHED 1832—FITCHBURG, MASS.

Chicago, Ill.	New Orleans, La.	San Francisco, Cal.	Toronto, Ont.
Boston, Mass.	Memphis, Tenn.	Los Angeles, Cal.	Vancouver, B. C.
Detroit, Mich.	Atlanta, Ga.	Seattle, Wash.	St. John, N. B.
New York City	Portland, Ore.	Montreal, Que.	

The Winder for the Board Mills



Moore & White Heavy Type Four-Drum Winder in Mill of Eddy Paper Co., Three Rivers, Mich.

The Heavy type Four-Drum Winder shown above is especially built for winding board up to .050″ point, and in large diameter rolls up to 60″ diameter. With this type Winder hard, straight rolls can be made without telescoping or wrinkling. Tear-outs can be made in independent rolls without affecting other rolls, thereby eliminating waste. This Winder is one of three operating at Eddy Paper Co., Three Rivers, Michigan. Winding direct from paper machine Reels.

A FEW USERS

Pioneer Paper Co.
Paperboard Corp.
Gardner & Harvey Co.
Fort Wayne Corrugated Paper Co.
Mac Sim Bar Paper Co.
Arrowhead Mills.
Falulah Paper Co.
Paraffine Company
United Paperboard Co.
Terre Haute Paper Co.
Congoleum Co.
Ohio Box Board Co.
Eddy Paper Co.
Hinde & Dauch Paper Co.
Ball Bros.
American Coating Mills

THE MOORE & WHITE CO.

Established 1885

No. Philadelphia Station, Penna. R. R. Phila., Pa., U. S. A.

land Paper Merchants' Association at Providence, R. I., on May 8. The meeting was held at the Biltmore. Mr. Olmstead, as a former merchant with the Butler Paper Co., and past president of the National Paper Trade Association, gave the merchants some interesting viewpoints derived from a long and successful career. Mr. Olmstead insisted that the merchants exercise less control over the warehouse division of their business than they do over mill shipments, illogical as that seems, because they sell from warehouse under the constraint of constantly watching their competitors, and adopting every concession made by them which inundates the merchandising field with overhead.

It is understood that the Advance Bag & Paper Co. mill at Hodge, La., is practically ready for operation. Vice president J. N. Harvey is spending much of his time at the Louisiana mill.

Paper mills in Vermont were gratified to learn of the complete restoration of service on the Central Vermont R. R. This permits through freight shipments on this important link to Boston. The magnitude of the job can be appreciated in view of the fact that 21 new bridges were required.

A new coal pocket is being constructed at East Walpole, Mass., for Bird & Son, Inc. Contractors are Aberthaw Co., 80 Federal St., Boston.

Russell S. Madden has been appointed sales manager of the American Writing Paper Co. to succeed the late George J. Cadwell. Mr. Allen was a salesman with Garnett & Allen Paper Co. of St. Louis where he learned the business. The St. Louis company was merged in 1911 with the Graham Paper Co., and Mr. Madden became eastern representative in New York. He joined the American Writing Paper Co. as assistant sales manager in 1922. R. D. W. Ewing is taking over Mr. Madden's position as assistant general sales manager and Charles W. Wood relieves Mr. Ewing as manager of the New York office.

George J. Cadwell

George J. Cadwell's death on May 18, 1928, was a severe shock to his associates and a source of profound sorrow to his host of friends throughout the industry.

Mr. Cadwell was born in De Witt, Mich., in 1872. He graduated from the University of Michigan in 1894; was captain of the Michigan football team, and a room mate of Stewart Edward White, famous novelist and president of his class. For ten years he was with General Motors and the Allis-Chalmers Co., then he joined the Christianson Engineering Co. until that business was acquired by Westinghouse. Later, he established his own business in Minneapolis selling power devices for paper and pulp mills.

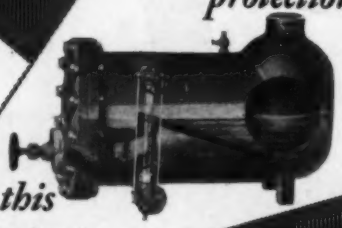
Mr. Cadwell came to the American Writing Paper Co. at their Chicago office in 1918 and the following year was transferred to Holyoke where he was assistant general sales manager. In 1923 he became sales manager and hardly a month before his death at the annual meeting in New York he was elected a vice president. He is survived by his wife and a sister.

Lee Higginson Co., Boston, are offering for general subscription, 4½ per cent general mortgage bonds of the Rumford Falls Power Co., a subsidiary of the Oxford Paper Co., of Rumford, Me. Its hydroelectric power company has an installed capacity of 42,000 h.p. There are long stretches on the river controlled by the power company which also owns the Rumford Falls Railway, operated by the Maine Central under a long term lease.

The New Hampshire and Massachusetts Public Service Commissions and the Interstate Commerce Commission have granted the request of the New England Paper and Pulp Traffic Association for suspension of scheduled advances in coal rates from all New England tidewater points south of Portland to interior mill cities and towns. Except for Holyoke, it is safe to say that 75 per cent of the New England paper

ONE SOURCE FOR ALL
ONE PARTY RESPONSIBLE
It is good management to place responsibility for the merit of a product, or a specialized service, with that organization which works with heart and mind to insure the utmost satisfaction from the service its product renders throughout years of use.
Such an organization is the T. B. WOOD'S SONS CO. For more than seventy years we have served the industries of this country in solving their problems of Power Transmission, and installing Power Transmission Machinery and Equipment.
We gladly place our seventy years experience at your service without obligation.
DRIVE RIGHT
T. B. Wood's Sons Co.
Chambersburg, Pa.
POWER TRANSMISSION MACHINERY AND SPECIAL MACHINERY

Double protection



in this steam trap

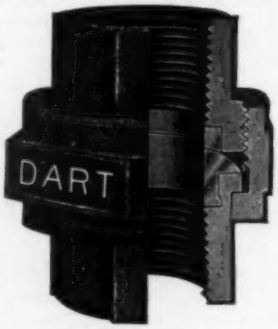
THERE is a double safety feature in this sturdy Davis Steam Trap. *Two* valves relieve the condensate, [assuring absolute dependability in service] a characteristic of Davis design. These cone shaped valves, loosely hung, are designed to open away from their seats. Their action is free—they cannot stick!

Controlled by a float the Davis Steam Trap adjusts itself automatically for any rate of flow. With its positive action double valves it has the large reserve capacity necessary for indirect heating, steam and oil separators and wherever the big volume of condensation is subject to great variation. Details are given in the catalog, sent on request.

G. M. Davis Regulator Co.
414 Milwaukee Avenue
Chicago, Illinois

DAVIS VALVE
STEAM SAVERS SINCE 1873
SPECIALTIES

PI-6-Gray



Know the merits of the Dart Bronze to Bronze ground seat Unions

Try a free sample

Strength of Malleable Iron in combination with
2 Two Non corrosive seats of bronze

E. M. DART MFG. CO.
Providence, R. I.

Distributors
The Fairbanks Company
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Toronto, Canada.

SCRANTON

Centrifugal

Steam **Triplex Plunger**
Vacuum Pumps **Jet Condensers**

Manufactured by
The Scranton Pump Co., Scranton, Pa.

PUMPS

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

mill steam coal comes from Hampton Roads via the tidewater ports, and the increase was a very serious proposal from a competitive factor, power costs being normally high in New England. The I. C. C. suspension extends to December 28th the full seven months after May 28th (the scheduled effective date of the new rates) allowed by law.

On Saturday, May 21st, a hearing before an I. C. C. examiner was held in the Federal Building, Boston, on complaint of the Advance Bag & Paper Co., of Howland, Me., against the proposed increase from 15c to 22½c on salt cake from Portland, Me., to Howland. The rate applied on import traffic and is the second complaint this mill has made against a salt cake rate the other involving shipments from certain domestic shipping points to Howland. The proposed increase has been suspended for the present.

Martin Cantine Company, Saugerties, N. Y., has appointed Meek & Whitney, Inc., Springfield, Mass., its agents in that section of New England.

Two machines are to start in July at the Whiting Paper Co. mills out of an eventual installation of 18 fourdriniers. This is in the property formerly part of the Lyman mills which was acquired by Whiting last year.

NORTHERN NEW YORK NEWS

Plans Under Way for Pulp Terminal

Northern New York paper manufacturers have under consideration plans to erect a pulp terminal at Cape Vincent 25 miles from Watertown. At this point shipments could be made from lower Canada and could easily be transported by rail to the various mills in Northern New York. The Northern New York manufacturers held a meeting recently to discuss the matter. The heavy freight rates on pulp wood by rail has long been a problem of Northern New York manufacturers. The St. Regis Paper Co. has its own pulp terminal at Waddington on the St. Lawrence River from which pulp wood is distributed to its mills in Northern New York. The United States government has authorized the deepening of the main channels of the St. Lawrence to a depth of 22 feet. It is also planned to make paper shipments to Western points from Northern New York by water, saving the high rail charges for transportation.

Edward T. Carter, aged 75 years, former superintendent of the bag mill of the Dexter Sulphite Co., died at the Masonic Home in Utica early in May, aged 75 years. He was superintendent of the bag mill until a few years ago when he retired on account of ill health. Before coming to Dexter he was with the Union Bag and Paper Co. of Hudson Falls.

Although minor wage adjustments were made for certain class of employment, the present wage schedule of the six unions whose members are employed in the Glens Falls pulp and paper mills of the Finch-Pruyn and company will remain practically unchanged for the coming year.

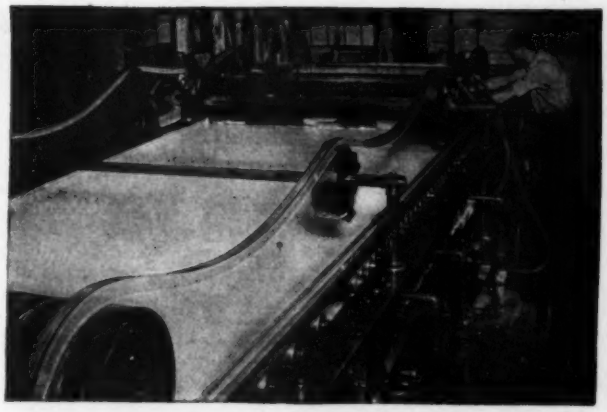
The digester plant of the Gould Paper Co. at Lyons Falls was badly damaged by fire May 11. Three digesters were badly damaged and the loss is estimated at $20,000.

The will of the late Representative T. C. Sweet, president of the Sweet Brothers Paper Co., shows that he left an estate in excess of a half million dollars. The estate is divided between his widow and four children.

New Patents

Patents have been issued to Alfred and Thomas Coty for a bag feeding machine, the patent application having been filed Dec. 30, 1926. The Coty patent is described as follows:

"In a machine of the class described, a magazine con-



They changed to Oakite
and now felts last longer!

CONSIDERABLY longer, in fact. Now that this southern paper mill is washing felts with Oakite, they are lasting fully four weeks where formerly only three weeks was the average life of a felt.

Making felts last longer is a regular part of the good work Oakite is doing for paper mill men. This safe, free-rinsing material also saves money on many other jobs—reduces scrubbing and speeds up cleaning of wires, screens, sieve cloths, cylinder rolls and other equipment.

It costs nothing to find out what these Oakite advantages will mean to you. When you write for details just ask to have our nearby Service Man call and explain. No obligation, of course.

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OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, *Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Canton, O., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Greenville, S. C., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., *Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., Oshkosh, Wis., *Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Poughkeepsie, N. Y., Providence, Richmond, Va., Reading, Pa., *Rochester, N. Y., Rockford, Ill., *Rock Island, *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

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for the asking

Where shall we send it?

SAMUEL M. LANGSTON COMPANY, CAMDEN, NEW JERSEY

A. H. COX & COMPANY, INC., SEATTLE, WASHINGTON

LANGSTON SLITTERS

CLEAN SHEAR CUT CUT

structed to support a pile of tubular bag blanks in superposed relation with the underside of one end of the lowermost blank free, a blade to engage and support the upper law of the lowermost blank near the center of the said end, and means to press said wall downwardly at each side of the blade, thereby to form a pocket to facilitate the entrance of opening means."

A process and apparatus for treating fibrous materials for pulping purposes is the invention of Thomas L. Dunbar, who has assigned his patent to the Chemipulp Process, Inc., Watertown. The description of it follows:

In a chemical pulping process, chemically digesting fibrous material while introducing steam into the same, permitting the steam to condense and mix with the liquor used for digesting purposes, continuously circulating the mixed liquids through said fibrous material, and after the mixture reaches a predetermined volume, directing the excess of the mixed liquid into an accumulator."

Announcement has been made by Corwin T. Jewell, general manager of the St. Regis Paper Co., that construction work will be started immediately at Oswego to double the capacity of the bag department of the Oswego-Taggart Bag and Paper Co. It will increase the capacity from 180,000 to 350,000 paper bags daily, making it the largest bag factory in North America. The building will be 360 by 67 feet in size.

Amicable settlement of all disputed and projected litigation in the Diana Paper Co. bankruptcy by the payment of approximately $30,000 by Mark S. Wilder, president of the defunct concern to Trustee Daniel B. Schuyler for the benefit of proven creditors, has been reached. The amount will be sufficient to provide a total dividend of 35 per cent to the creditors.

PACIFIC COAST NEWS

WASHINGTON

First Pulp Mill for Seattle

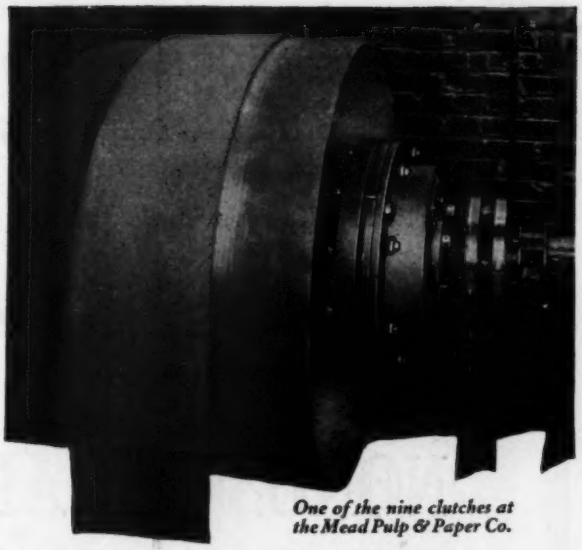
The Seattle Pulp and Paper Mill, Inc., is the name of a plant which is to be started soon in Seattle, Wash., and which is being launched by a group of Portland, Ore. people, including Tom G. Taylor who has been instrumental in financing three pulp and paper mills in Oregon and Washington.

This mill, which will cost approximately $2,000,000, will manufacture 50 tons of high-grade bleached sulphite pulp daily and will turn approximately 30 tons into high-grade paper, each day, disposing of the remaining pulp on the eastern market.

Twenty-one acres in Duwamish waterway, the industrial section of Seattle have been secured for the mill, and the State has issued a perpetual permit to the mill to appropriate 10,000,000 gallons of water from the Green River. A state permit has also been issued allowing the mill to dump its sulphite liquor into the Duwamish River at ebb tide. A contract running for ten years has been entered into with the Canyon Lumber Mills of Everett for the raw material.

The general management of the mill will be in the hands of Joseph Kaster, prominent Oregon papermaker, who with Mr. Taylor and others financed the project. Mr. Kaster was instrumental in building the St. Helens Pulp and Paper mill, operated the mill at Salem, and for 25 years was superintendent of the Crown-Willamette Paper Co.

Joseph Irving of Everett, Wash., president of the Puget Sound Loggers' Ass'n, is president of the Seattle Pulp and Paper Mill; Allen B. Engle, a graduate of the Yale school of Forestry who has been in the logging business on the Puget sound for several years, is secretary. Other officers and directors include: James Stirrat, president of Stirrat and Goetz Investment Co.; E. K. Worthington, president of the Washington Tug and Barge Co. and president of the Seattle Mortgage Co.; Ralph Miller, director of the pulp mills at Bellingham and Anacortes, Wash. and president of the Mutual Paper Corporation of Seattle; and Corwin S. Shank, attorney.



One of the nine clutches at the Mead Pulp & Paper Co.

This paper company has solved its starting problem

The Mead Pulp & Paper Company, like many others, is using C-H Magnetic Clutches to solve the problem of trouble-free, smooth, jerkless starting so essential to paper machine drives.

With Cutler-Hammer Magnetic Clutches in the drives, the acceleration is smooth and even—no jerking to wear felts, or to break the paper. And the operation is simple:—just press the button and the clutch does the rest.

There are other advantages, too. Send for C-H Clutch Publication P-27 —it gives the facts.

This booklet, especially prepared for paper mill men, contains a world of useful information. Complete data on C-H Magnetic Clutches with photographs of many installations. Just ask for Publication P-27.

The CUTLER-HAMMER Mfg. Co.

Pioneer Manufacturers of Electric Control Apparatus

1273 St. Paul Avenue

MILWAUKEE, WISCONSIN

CUTLER HAMMER

Magnetic Clutches Save Time and Save Equipment

If you "don't choose to run" That's your LOSS
If you "do choose to run" That's your GAIN

REFERRING OF COURSE TO RUNNING **"TENAX" Felts**

TENAX Means STRENGTH DURABILITY SERVICE

NONUSERS ARE THE LOSERS

"TENAX" Felts FOR ALL PURPOSES

MADE ONLY BY

LOCKPORT FELT CO.

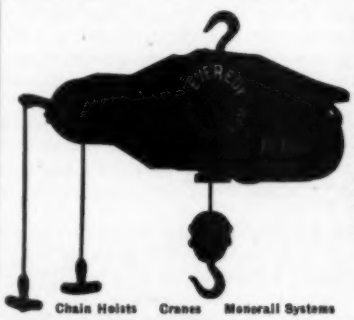
NEWFANE, N. Y.

Instruments for Calipering, Weighing and Testing Paper and Box Board:

Automatic Micrometer Calipers
Automatic Board Scales
Automatic Tissue Scales
Automatic Paper Scales
Automatic Felt Scales
Electric Board and Paper Testers (Automatic)

E. J. CADY & COMPANY
549 W. Washington Blvd., Chicago, Ill.

500 lb. Electric Hoist



$225.00

This Everedy Hoist is the most accessible hoist made. Light — 500 lb. hoist weighs 225 lbs.; 1000 lb. hoist 250 lbs. Speedy — 40 feet per minute A. C., 35 feet per minute D. C. Limit stop at top and bottom adjustable to any point. Suspended wherever chain or air hoist is placed.

Chain Hoists Cranes Monorail Systems

READING CHAIN & BLOCK CORP.
READING, PA.

TRIMBEY MACHINE WORKS
Glens Falls, N. Y.

Consistency Regulators.
Metering Systems.
Float Valves.
Stock Meters.
Rotary Pulp Screens.

Also "Made in Canada"
Agencies in Principal European Countries.

Self-setting Packing— Daniel's P. P. P.

P. P. P. was the original self-setting packing, and it still holds its lead for durability and efficiency.
It is set up "finger tight" and accommodates its bearing to the steam pressures. Engineers know that easy bearing insures long wear and less replacements and trouble. Send for sample.

QUAKER CITY RUBBER CO.
WISSINOMING, PHILADELPHIA
Branches: New York, Chicago, Pittsburgh, San Francisco

This is the first pulp and paper mill to be established in Seattle.

Grays Harbor Pulp Co. Offers Stock

The Grays Harbor Pulp Co., a subsidiary of the Zellerbach Corp., which is now erecting a sulphite pulp mill with a daily capacity of 175 tons of unbleached sulphite, or 150 tons of bleached sulphite, on a 29 acre tract of land in Hoquiam, Wash., is offering for sale $2,500,000 worth of first mortgage six per cent gold bonds. These bonds are dated April 1, 1928, and will be due in five years.

A wood preparing plant, warehouse, docks and a modern well equipped power house are included in the auxiliary facilities of the plant. All of the buildings will be of reinforced concrete and all equipment and machinery is to be new. Long time contracts have been made with closely adjoining saw mills for supplies of sawmill waste for fuel, which will permit the plant to generate steam and power for its own use at a low cost. Water rights have been acquired by the company and a modern water system is being built which includes about seven miles of 36 in. pipe line with filter plant and necessary accessories sufficient to supply a maximum of twenty million gallons of water a day.

Union Bag & Paper May Build in Vancouver

Reports are current that the Union Bag and Paper Co. will establish a plant at Vancouver, Wash., adjoining the Columbia River Paper Mills. This concern several months ago began construction of a plant at Tacoma, Wash.

At a meeting of the city council in Vancouver on May 14, a unanimous resolution was signed for the vacation of the section of West Fifth St. which runs through the Columbia River Paper mill property, permitting this mill to grow and allowing for the establishment of the Union Bag and Paper Co. plant. This is said to have been the only obstacle in the way of establishing the Union Bag and Paper Co. plant in Vancouver, and since it has been removed, the mill seems assured, according to rumor. It was expected that an ordinance carrying out the vacation of that property would be passed on June 18.

Arrangements have been made by the company for the sale of preferred and common stocks, whereby it receives approximately $2,000,000 which, with the proceeds from the sale of these bonds, will be invested to the extent of approximately $4,000,000 in timber lands, manufacturing plant, machinery and other fixed assets, and the remainder will be held in the company as working capital. Any additional capital will be supplied by the company through the issuance of securities junior to these bonds, in case it is needed in the operation of the plant.

According to a statement from E. M. Mills, president of the company, which was published in the local papers, more than fifty per cent of the preferred and common stocks is in the hands of I. Zellerbach, E. M. Mills, J. D. Zellerbach, all of whom are active officers in the Zellerbach Corp., and the Polson Logging Co. of Hoquiam, Wash., and Robert Polson, Manager of the Polson Logging Co.

The National Paper Products Company, a Zellerbach corporation, now erecting a $3,000,000 kraft paper mill at Port Townsend, Wash., will construct a second unit, the two units being the largest yet to be built on the Pacific Coast, according to A. B. Lowenstein, resident manager. Together the units will employ 400 men. Operation of the first unit is expected to start in July, when a new water system now being installed by Port Townsend will deliver 14,000,000 gallons of water daily to the plant.

OREGON

Portland Bidding for Electro-Chemical Plant

Portland, Oregon and Tacoma, Washington are being considered as possible sites of a $2,000,000 plant which the Hooker Electro-chemical Co. of New York contemplates estab-

A 24 inch 12 ply Cincinnatus Belt driving an 84 x 84 Breaker Beater in the plant of the Continental Paper Company, Bogota, New Jersey.

The Toughest Test

Here is a tough drive—probably as tough as demanded of any belt.
Two leather belts lasted 3 weeks each—but a year and a half continuous and satisfactory service was given on the same drive by Cincinnatus.
Worn? Yes—and why not—after this record service. It's demonstrations like these that have given Cincinnatus the preference in leading American plants. Cincinnatus is built specially to meet the needs of the paper industry—and even on a Lenix drive, such as illustrated, it shows to good advantage. Its construction reduces stretch to an absolute minimum.
Write us about your special belting needs.

The Cincinnati Rubber Mfg. Co.,
Cincinnati, Ohio
New York Chicago Pittsburgh Detroit

"Give me this paper every time!"

WHAT paper manufacturer doesn't like to have users speak that way about his paper?

A user who feels that way toward a certain paper knows how dependable it is—he knows from experience that it saves him worry and trouble, and he insists upon using it.

Behind such a paper is a manufacturer who himself places a high value upon dependability. He also insists upon supplies and equipment of proved merit—particularly does he recognize the value of dependable Fourdrinier Wires.

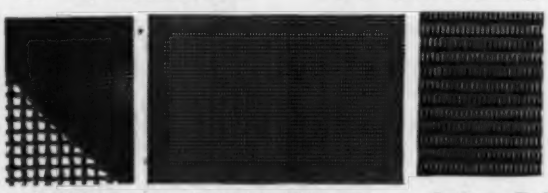
He knows that the kind of Fourdrinier Wires he uses is an important factor in maintaining the high quality and standard of his paper; that they must be dependable as to uniformity of mesh and weave; that they must run straight and true.

That is why papers of every kind, from the finest tissues and cigarette papers, to heavy wrapping and roofing papers are made on Tyler Fourdrinier Wires.

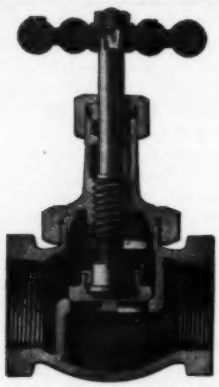
Supplied in all widths up to and including 234 inches

The W. S. TYLER COMPANY,
Cleveland, O.

TYLER WIRES



Backing Wire — Tyler Fourdrinier Wire — Corduroy Cloth



LUNKENHEIMER
BRONZE
REGRINDING
Globe, Angle and Check Valves

Medium-200 lb. W. S. P.
Extra Heavy-300 lb. W. S. P.

In practically every industry, thousands of users have established Lunkenheimer Bronze Regrinding Valves as the standard by which bronze globe, angle and check valves are judged.

Correct design, sturdy construction, regrindable seating surfaces and renewability of all parts subject to wear, insure the maximum degree of satisfactory low cost service over long periods of time.

Lunkenheimer Distributors, located in all industrial centers, carry complete stocks. They will fill your requirements promptly.

The wide range of patterns and sizes are shown in Booklet No. 517. A copy will be sent upon request.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO BOSTON PITTSBURGH
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EXPORT DEPT. 120-128 LAFAYETTE ST., NEW YORK

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lishing on the Pacific Coast. About two months ago Elon H. Hooker, president and founder of the company, was on the coast investigating the two cities. Reports from the Portland Chamber of Commerce indicate that comparative surveys have shown Portland to be an advantageous location in every respect with the exception of power rates. It is reported that Tacoma makes its strongest bid on the municipal power rates.

Guy W. Talbot, president of the Northwestern Electric Co., and Franklin T. Griffith, president of the Portland Electric Power Co., were in the East late in May and early in June, to follow up the conferences held between their engineers and officials of the Hooker company with a view to making agreeable arrangements on power rates.

Board Mill for St. Helens

Articles of incorporation were filed late in May by the Firtex Board Insulating Co. which will erect a mill at St. Helens, Ore., for the purpose of manufacturing a fire-proof building board from sawdust waste from the sawmills in that vicinity. Incorporators are Hammond T. McCormick of the McCormick Lumber Mills in St. Helens, and president of the new organization; A. H. Middleton, vice-president, a well-known figure in the pulp and paper industry in California and the East; and Tom G. Taylor, Portland, who has promoted a number of mills in Oregon and Washington.

The plans for this mill are now being formed and directors are being selected. No definite announcement could be obtained as to when actual construction would start and how large the proposed mill will be.

CALIFORNIA

Pacific States Paper Trade Ass'n

F. M. Couch of Blake, Moffitt and Towne, Los Angeles, was named president of Pacific States Paper Trade Ass'n which met for its eleventh annual convention in Del Monte, Cal. on May 9, to 12. He succeeds M. R. Higgins of the Zellerbach Paper Co., San Francisco. Other officers are, executive first vice-president, Frank C. Stratford, Zellerbach Paper Co., San Francisco; vice-presidents, F. E. Jeffries, Tacoma Paper and Stationery Co., Tacoma; Thomas A. O'Keefe, Pacific Coast Paper Co., San Francisco; Charles Pritchard, Bonestell and Co., San Francisco; G. O. Rogers, Spokane Paper and Stationery Co., Spokane; and secretary-treasurer, Charles Kahn, San Francisco.

Mr. Higgins presided over the meeting at which there was an attendance of about one hundred persons. A number of problems of interest and importance to the paper trade were discussed during the meeting.

A golf tournament was participated in by members of the association and their wives. A number of valuable prizes were donated the various paper firms.

According to P. Swan, engineer with offices in the Lewis Bldg., Portland, arrangements are completed for the erection of a mill in the vicinity of Sacramento, Cal., which is to be known as the Pacific Coast Pulp and Paper Co. The project is being backed by a group of Los Angeles men whose names are withheld. It is probable that the mill will have a capacity of fifty tons daily.

Wisconsin Inaugurates School Forest Plan

The State of Wisconsin, a pioneer in many great enterprises, has made another stride in conservation. The Forestry Conference held at Milwaukee, March 28 and 29, is bearing fruit. New movements are being set in motion which are constant reminders that the Badger State is seeking by persistent and unified effort to re-establish its forests.

The latest and one of the most interesting steps in this direction, is the new School Forest Plan, the first to be organized in this country. This idea has grown from the observations of H. L. Russell, Dean of the Agricultural college at Madison, on his recent trip to Australia and New Zealand. This plan of attempting to stimulate interest in forests among

American-Marsh Centrifugal Boiler-feed Pump, Watervliet Paper Co., Watervliet, Mich.

The Heart of Your System Must be Dependable

THERE can be no substitute for quality when it comes to your boiler-feed pump. It is the very heart of your power plant system. If the pump stops, the power stops.

We build our centrifugal boiler-feed pumps heavier than customary—heavier by quite a margin. This extra weight in every working part means extra strength—greater ability to endure the strains and stresses of continuous service, year after year.

If absolute dependability is a paramount issue with you, let's get together the next time you need pumps. The American-Marsh line is complete—single and multi-stage for low and high pressure—capacities for every operating condition. Write for specifications and performance ratings.

AMERICAN-MARSH PUMPS

Steam and Centrifugal
Boiler Feed
Vacuum
Condensation
Circulating
Booster
Fire
Stock Handling

AMERICAN-MARSH

AMERICAN STEAM PUMP COMPANY
BATTLE CREEK, MICHIGAN

PUMPING EQUIPMENT

EXPERIENCE

Knowledge gained from over 50 years of making Wires for American and Foreign paper makers has led to the development of looms of our own design; wire drawn to specification in our own plant; skilled, experienced operators, and a product giving long and dependable service.

Appleton Wires
are good wires
APPLETON WIRE WORKS INC., APPLETON, WIS.

school children has been officially recognized by the State and the first school forests, consisting of forty acres in three Forest County communities in Northern Wisconsin, already estalished.

A covenant is signed by each of the children which pledges them to be ever alert to their duty to plant forest growth and protect forest life. They also agree to respect and obey all laws both legal and natural that are necessary to a full and continued enjoyment of forest life. The forests mentioned will be used as laboratories for nature study. A few acres will be planted each year, seedlings to be furnished by the State Conservation Commission. Along with the growing of trees, wild game will be raised on these tracts.

New Catalogues, Books and Publications

American Electric Motor Co., Cedarburg, Wis.—Bulletin No. 102 entitled "American Electric Motors" gives a general description of the various types of motors manufactured by this company, the advantages of each and the method of manufacture. There are numerous illustrations.

Bristol Company, Waterbury, Conn.—Bulletin No. 365 describes and illustrates the counters made by this company, including magnetic counters and engine counters. Prices of different types are given, also illustrations showing counters in operation in different installations.

Cleveland Electric Tramrail Div., Wickliffe, O.—A very attractive catalogue issued by this division of the Cleveland Crane and Engineering Co., completely illustrates and describes the extensive line of overhead carrying equipment manufactured. A large number of photographs illustrates installations in practically every industry. Tables showing dimensions, clearance, overhang, etc., also prices, are given.

Combustion Engineering Corp., New York City—This company has issued reprints in booklet form on the subjects of "Design and Application of Traveling Grate Stokers" and "Design and Application of Forced Draft Chain Grates". Copies will be furnished upon request.

Elwell-Parker Electric Co., Cleveland, O.—A new catalogue has been issued descriptive of this company's line of electric industrial trucks, cranes and tractors (tructors). A type of equipment applicable to every kind of inter-plant transportation is shown. The catalogue is very attractive and well illustrated in colors.

Hagan Corporation, Pittsburgh, Pa.—A most complete description of Hagan Master Regulators is given in bulletin No. 101. There are illustrations and figures showing cross section views and plates with clearance dimensions. Other bulletins give similar information on Hagan Special Control Valves and Governors, No. 103; and Hagan Balanced Float Controllers, No. 102.

Hermann Manufacturing Co., Lancaster, O.—A new booklet, "Standardized Jordan Efficiency," gives a concise and complete outline of the Hercules Jordan built by this company. The special features, advantages and economies are brought out. Copies upon request.

International Combustion Engineering Corp., New York City—The April edition of The Safety Valve, is entitled A. S. M. E. or Better Boilers. Some of the points in which the regular construction of both Heine and Ladd boilers exceed the requirements of the A. S. M. E. code are given. Copies to those interested.

W. A. Jones Foundry & Machine Co., Chicago, Ill.—A 24 page booklet describes an improved method of generating Herringbone Gears. It shows tooth forms, dimensions, price lists in cast iron and steel for recommended face widths and horsepower tables for open gearing.

BOOK REVIEWS

Directory of Papermakers of Great Britain and Ireland—Marchant Singer & Co., 47 St. Mary Ave., London E. C. 3, have issued this directory for 1928, a book of 272 pages containing an alphabetical list of the paper and paperboard manufacturers in England, Scotland and Ireland. The mills are listed numerically, alphabetically and by counties. There is also a list of papermakers' representatives with their addresses, besides much miscellaneous information, including a complete list of watermarks and trade names as well as maps showing the location of paper mills in the different countries. The references to mills do not give particulars of machinery to the same extent as our own directories, but the character of paper or boards made is fully indicated and the volume is so arranged as to be convenient of reference. Evident care has been taken to give authentic information concerning products manufactured. The price of the book is five shillings and sixpence, or approximately $1.50, plus postage.

Manufacture of Paper Cones, Bags and Sacks—Volume I of the second edition of Heinrich Thurmmes' **Tueten-, Beutel-und Papiersack-Fabrikation** has been issued by the publishers of Papierzeitung, Berlin, at 15 marks. In this volume of 400 pages, the manufacture of bags and sacks and the machines used therefor are minutely described, and the methods of testing paper, find adequate mention. Vol. II will take in adhesives, inks and printing methods as shown by the table of contents printed in Vol. I. If the two volumes are ordered together, the price is 25 marks.

Department of Commerce—The Standards Yearbook for 1928 has just been released. This is the second issue of the Yearbook. The first edition, issued in 1927, outlined the organization and procedure of the numerous standardizing agencies in this country together with certain foreign agencies. The 1928 volume contains outlines of the activities and accomplishments of not only the National

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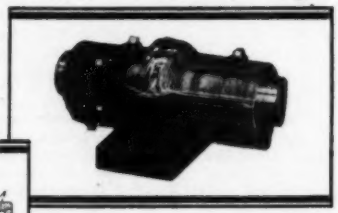

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POWER TRANSMITTING ENGINEERS

Bureau of Standards and other agencies of the Federal Government and the States, counties and municipalities, but also those of technical societies and trade associations. Special emphasis is placed on their work during the past year and future programs. There is a very interesting chapter on the technical standardization of paper, which covers the degree of sizing, testing, fiber determination and freight classification. There is also a bibliography contributed through the courtesy of William Adams Slade, chief division of bibliography, Library of Congress. Copies may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. Price $1.00.

May Meeting Paperboard Industries Ass'n

The meeting of the Paperboard Industries Association May 16 and 17 at the Palmer House, Chicago, was well attended. The various groups held meetings, and the association closed with a general meeting of all groups the afternoon of the 17th. The general meeting was the occasion for report of the executive committee on a number of important subjects which have been under consideration. General Manager Browder submitted a concise report of the principal activities of the association since the March meeting. There was also an interesting report from Dr. E. O. Merchant, the association's economist on "General Business Conditions and the Paperboard Industries." This report was furnished to members in printed form. The general session closed with an address by President Alford.

Folding Box Group—At the opening of this session, the vice president, H. S. Hinkle, presided. He made a strong plea for co-operation by members of the group for an increased interest in the work of the association in behalf of the industry. The sales promotion committee made an interesting and constructive report showing progress made in extending the use of folding boxes. Satisfactory folding boxes have been designed by the sales promotion department for the packaging of certain fruits, and these packages have been well received by growers, dealers and retailers. Samples were exhibited at the meeting.

Paperboard Group—The meeting of this group was presided over by vice president E. R. Hankins, and was very well attended. Interesting addresses were made by C. M.

AT LIBERTY NOW. A factory executive with years of practical experience in developing and successfully manufacturing wood pulp and wood pulp substitute products. Has specialized in economical drying, saturating and waterproofing, etc. Thoroughly conversant with latest production management in this type of work and with a highly successful record. Further details will be furnished or interview arranged upon request. Address Box 139, The Paper Industry.

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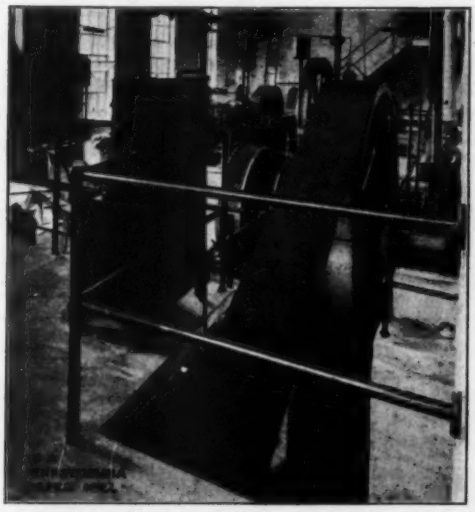

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Baker, engineer of the American Paper and Pulp Association, and L. M. Booth, president Booth Chemical Co., on the subject of waste conservation and stream improvement. Eliminating the manufacture and use of inferior container boards was a subject which received earnest consideration. Members of the group heartily endorsed a plan of procedure recommended by the executive committee, whereby the association will employ a corps of inspectors to check up on corrugated or solid fibre boxes in general use to see that the boxes fully meet the requirements of the railroads and express companies.

Container Group—At the meeting of this group, which was presided over by vice president J. J. Brossard, the general manager submitted a comprehensive report mentioning particularly the changes recently made in the freight packing requirements which are of considerable interest to the container manufacturers and the users of fiber boxes. This report was favorably commented upon and it was pointed out that a number of packages recently authorized by the Consolidated Freight Classification make available new fields for the use of corrugated and solid fiber boxes; that is fields in which the use of such containers was prohibited by the carriers' heretofore existing regulations.

The next meeting of the Association will be held at the Clifton Hotel, Niagara Falls, Ontario, July 18 and 19.

The Branch office of the Allis-Chalmers Manufacturing Co., Grand Rapids, Mich., has been moved to 310 Building and Loan Bldg. This office is a branch of the Detroit office and is in charge of G. C. Culver.

The Erie City Iron Works, Erie, Pa., has established a direct sales office at 1105 Leader Building, Cleveland, O., with Eugene Smith as district manager.

It is reported that the Container Corporation will install a new machine in its Ogden Ave. plant at Chicago.

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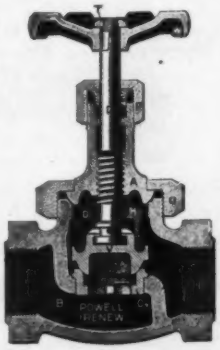

Fig. 190
Irenew Globe Valve

Powell Irenew Valves are designed with bronze union bonnet and spindle, and heavy grey iron body, or may be obtained with iron trimmings. All parts are accurately processed. Irenew Valves are obtainable in globe, angle, cross, and check patterns for 150 pounds, and extra heavy for 250 pounds W.S.P. Sizes ¼ to 3 inch.

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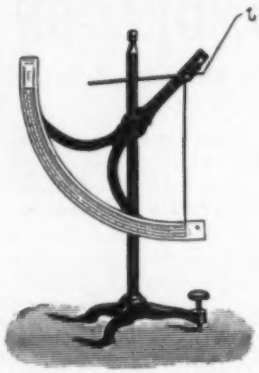

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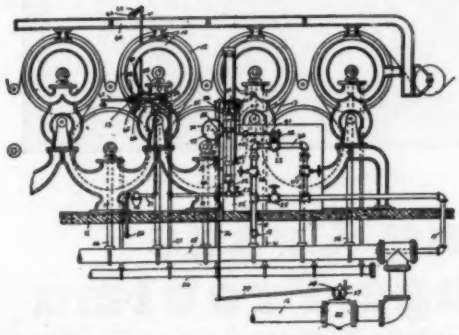
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Recording Device for Paper Machines

THE papermaking machine, which is shown in the accompanying illustration, is provided with means for controlling the heat in drying the paper web as it passes around the



drying cylinders. This controlling device is regulated by the tautness of the paper. A recording device is furnished and this device is connected with the heat regulating device. Thus the recording device gives a record which indicates the tautness of the sheet of paper during its manufacture. C. J. Guenther, Boston, Mass., assignor, Stickle Steam Specialties Co., Indianapolis, Ind. United States Patent No. 1,667,516.

Determination of Alpha Cellulose

A VERY important and interesting article on the subject of alpha cellulose written by Dr. Carl G. Schwalbe, has been published in Der Papierfabrikant, year 1928, pages 189 to 198. The author states that three separate sets of experiments were carried out on this subject. It was established that the alpha cellulose analysis is a conventional method and must remain so, for the reason that it cannot be carried out with such accuracy as to be absolutely satisfactory from the scientific point of view. The reason for this is that it is impossible to separate quantitatively wood gums, resins, lignins, etc. from the cellulose in a simple way. Comparative results can be obtained only when the investigators and analysts employ the same analytical method. The analytical results are affected by a series of factors, which are discussed in a critical manner from the standpoint of the experimental results that are available. These factors are as follows, the method used in taking the sample of the pulp to be analyzed; the method used in reducing the pulp sample into fine fibrous state; the preliminary drying to which the sample is subjected; the mercerization of the sample; the pressing to which it is put; the swelling or hydration action; the kneading action; the temperature factor; the dilution; the filtration; the washing; the removal of the acid contained in it; the drying; the weighing; the method of calculating the results.

Penetrability of Air Through Paper

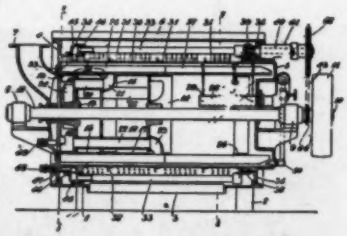
THE attention of investigators has been called for some time in the past to the question of the amount of air penetrability bag paper or sack paper possesses. This point appeared to be of special interest to the cement industry which uses paper bags for packing and shipping cement. It has been claimed that the paper bag is unsuitable for this purpose due to the fact that it readily allows air to enter through its pores and thus to destroy the cement or rather make it unusable. Careful examination has revealed that the spoiling of the cement is often due to the spilling over of the cement while being filled into the bag and the action of this cement on the paper of the bag in the presence of air. It was deemed advisable to carry out a series of experiments to determine just how permeable paper was to air. The Schopp testing apparatus was used for this purpose. All the experiments were carried out in air with 65 per cent relative humidity. The degree of penetrability of paper to air is expressed by the number of liters of air, which pass through one hundred square centimeters of paper within a minute's time, when the air pressure differential is ten centimeters of water. The results obtained in this test are given below:

Number of paper	Kind of Paper	Quantity of air in liters
14	Bag paper	0.090 to 0.430
14	Bag paper	0.473 to 0.995
20	Bag paper	1.010 to 1.490
13	Bag paper	1.500 to 1.950
7	Bag paper	2.250 to 3.125
5	Bag paper	4.050 to 4.450
3	Bag paper	5.060 to 5.556
1	Bag paper	7.580
5	wood-free chemical pulp	0.051 to 0.964
6	wood-free chemical pulp	1.120 to 1.898
3	wood-free chemical pulp	2.142 to 2.678
3	wood-free chemical pulp	3.000 to 3.750
1	cigarette paper	6.593
1	cigarette paper	2.239
1	cigarette paper	3.000
1	cigarette paper	3.333
1	cigarette paper	4.054
2	parchment paper	0
1	impregnated packing paper	0
1	cellophane	0.032

Dr. B. Schulze, Der Papierfabrikant, 1928, page 198.

Screening Pulp

THE apparatus, which is seen in the accompanying illustration, consists of a perforated screen and a drum which can be rotated within that screen. The screen is seen at (32) and the drum at (25). This drum is provided with wings. Both the drum and the screen form a space for receiving pulp. The screen is provided with a number of zones, in which the screen is unperforated and which are separated by the perforated portions of the screen. The pulp enters into the pulp receiving space through inlets which extend into the unperforated portion of the screen. R. E. Wagner, Karlstad, Sweden. United States Patent No. 1,669,029.



Drying Paper

PAPER in the form of a continuous web is dried by passing over heated rolls, preheated air being conducted over the web in the direction of feed. The fresh drying air is preheated by air which has passed over the web, while the

Whiting 3-Motor Electric Traveling Crane, 4-tons capacity, 60'5" span. In paper storage, The Mengel Co., Louisville, Ky.

How A Whiting Crane Solved The Storage Problem

This manufacturer of paper products was confronted with the problem of providing additional storage for his growing business. The high price of real estate and rising labor costs made the old system of hand piling over a wide area both impractical and expensive.

A happy solution was the construction of a building of comparatively small floor area but sufficiently high to permit piling eight rolls deep by the use of a Whiting Overhead Electric Traveling Crane. Every foot of floor space is now available for storage—no need for passage ways. The crane operator from his cage overhead can quickly and easily "spot" any particular grade of stock when putting into, or taking out of, storage. A number of similar successful installations for other paper manufacturers confirm the effectiveness of this method.

There are many other uses for Whiting Traveling Cranes. With over 30 years successful crane building we have installations in all kinds of industrial plants, piling up profits day after day through savings in handling costs. Our engineers will gladly go over your problems on request.

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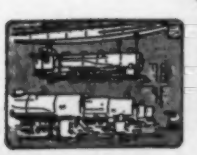
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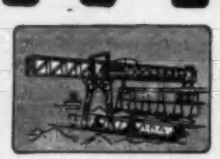
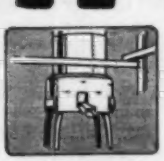

GANTRY CRANES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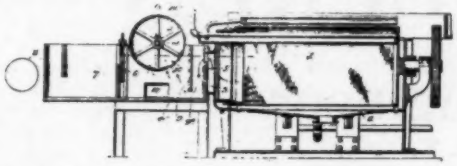
hood which surrounds the roll is heated to a higher temperature than that of the drying air for example by condensate from the drying roll. E. A. Ohlin, Hyltebruk, Sweden. British Patent No. 285,914.

Producing and Feeding Paper Pulp

THE apparatus, which is shown in the accompanying illustration, is used to clean paper pulp and to feed it to a papermaking machine. It is composed of a vat (2) and a rotary screen (I) which is located in the vat and which is adapted to be partially submerged in the paper stock which

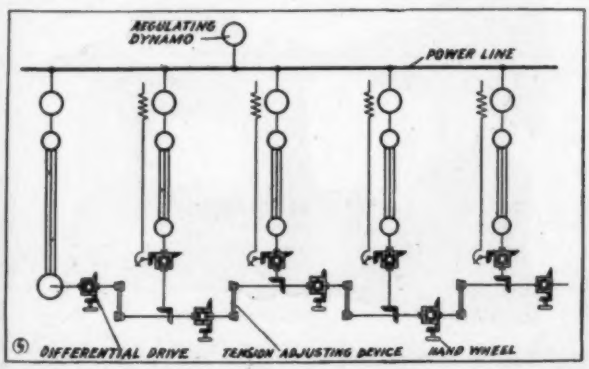


is fed to the vat. This screen is open at one end for the discharge of the cleaned pulp, which passes inwardly into the screen. A trough is located adjacent to the discharge end of the screen. A dam (9) controls the outflow of cleaned pulp from the screen into the vat. The trough is shown at (7) and at the upper part of this trough there is located the dewatering device (12). At the discharge end of the trough (7) a wier (6) is located as may be seen from the illustration. The thickened pulp flows through this wier out of the trough and on to the papermaking machine or rather into the stock chest of the machine. R. S. Clarke, Walpole, Mass., assignor, Bird Machine Co. United States Patent No. 1,668,141.

Series Connection of Paper Machine Drives

THE series connection is used in the driving of papermaking machines with the aid of electrical motors, a number of motors being used on each machine, and it has been established that this series system of connection possesses advantages over the parallel connection. On the other hand, when belts are employed in transmitting the driving power from the driving motors to the paper machine, it has been found that the series connection possesses a disadvantage over the parallel connection due to the greater mechanical stress on the cone pulleys. It is for this reason that this system is seldom employed under these conditions.

The article also contains a number of explanations of various systems of papermaking drives. The general conclusion which is derived from this article is that there are no overwhelming difficulties involved in carrying out the series



Electrical multi-motor drive for paper machines with special devices for regulating the common angular position between the individually driven shafts of the paper machine

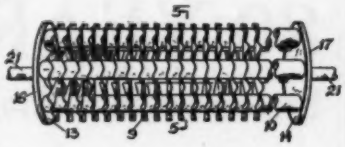
system of connection on papermaking machine drives. It is pointed out that an important advantage of the use of this system is the possibility of adjusting the angular position of the various parts of the paper machine with respect to one another in a very simple manner. When the hang of the paper web is too little or too large between any two parts of the papermaking machine, then the degree of the hang can be adjusted without disturbing the degree of tension or pull on the web passing through the machine by turning a hand wheel of the differential drive as shown in the figure. Such differential drives can be inserted between any two branches and added to the individual regulating devices. In this manner, the relative angular position of the individual portions of the paper web can be changed at will. Dr. F. Schiebuhr, Der Papierfabrikant, 1928, pages 212-8.

Recovering Alkali from Paper Waste

IN THE recovery of caustic alkali from the "black liquor" of paper manufacture, the liquor is concentrated by direct contact with hot gases, that is the hot waste flue gases used in incinerating the alkali or air heated by them. The plant comprises a grass boiler, a storage tank for the black liquor, a concentrating tower, a heater and an incinerating retort in which the concentrated liquor is burnt to soda ash. The ash is lixiviated with weak alkaline liquors and the sodium carbonate solution is treated with an aqueous solution of spent lime. The suspension obtained is causticized and the caustic soda solution is then stored against use. The chalk sludge separated in causticization is agitated with water in washers, the sludge being discharged as waste and the wash water stored in a tank against use as the alkaline solution for lixiviating the soda ash. The lime suspension is obtained by feeding lime on to a belt conveyer through hoppers to a long tube through which the lime is slowly advanced by an internal screw conveyer while in contact with weak alkaline liquors. The concentrating tower consists of an external casing containing a series of closely spaced vertical partitions of expanded metal. The liquor is fed to a trough from which it is pumped through tubes to V-shaped troughs from which the flow of liquor to the vertical plates or partitions is regulated by rods reciprocated by cranks. The calcining retort is divided into two chambers by means of a baffle located in a vertical position. The floors of the retort are inclined and the fuel used is oil. W. Barrs and E. E. Barrs, London. British Patent No. 285,933.

Flow Evener Roll for Papermaking Machines

THE flow evener device is shown in the accompanying illustration. It is composed of a rotatable element consisting of a number of circular elements (9) which are provided with undulating or fluted surfaces. This device is employed on the headboxes of papermaking machines. C. W. Valentine, Watertown, N. Y., assignor, The Bagley and Sewall Co. United States Patent No. 1,667,755.



Digestion of Pine Wood According to the Sulphite Process

A STUDY of the digestion of Scotch pine wood, which has been extracted with the aid of a mixture of benzene, ether and acetone, in accordance with the sulphite process, yielded the conclusion that there is a great similarity between this process than the digestion of pine wood in general. One of the reasons why it has not been possible to digest this wood in accordance with the sulphite process when it is extracted with benzene or ether alone is that the wood also contains substances which are soluble either in alcohol or acetone, and which prevent the proper digestion of the wood. When the digestion is carried out with a highly concentrated sodium bisulphite liquor, then residues are obtained which can easily be disintegrated into fibers and the yield is good. These pulps are, however, very rich in rosin, so that they can hardly be used in the manufacture of paper without first being deprived of their rosin content.

When the pine wood is digested with the aid of lime and sodium hydroxide solutions at a temperature of 105 degrees C., then a change is produced in the wood, which differs from other changes that are induced in it, in that acetic acid and formic acid go into solution. Saturated lime hydrate solution is able to split off approximately one per cent of the weight of the wood in acetic acid. This preliminary treat-

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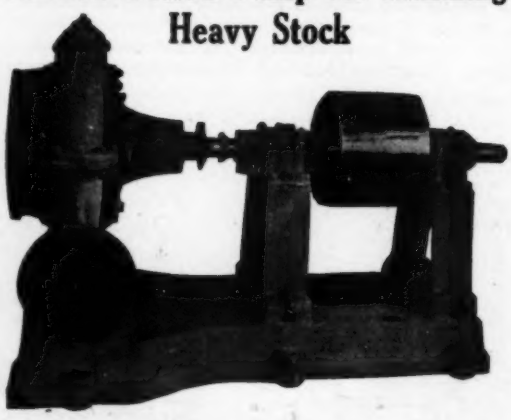

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ment of the wood is not injurious from the standpoint of the sulphite process. The pulps that are obtained in this manner contain a higher proportion of mineral matter, but the percentage of lignin remains about normal.

The pine wood which is extracted with a mixture of benzene and acetone and then treated with lime hydrate solution is not so well digested as one which is not subjected to treatment with the lime hydrate liquor. Extraction with benzene alone and subsequent preliminary treatment with lime hydrate liquor gave still worse results. Preliminary treatment of the wood with hydrochloric acid is also of no advantage.

Preliminary treatment of the non-extracted wood with alkalies at a temperature of 105 degrees C. did not yield a favorable result. The digestion was very incomplete. The residues contained a considerable proportion of lignin and could not be disintegrated into fibers. Furthermore, a large proportion of rosin remained behind in the residues. The ash content of these residues was also found to be very high, in fact extraordinarily so. Erik Haegglund, Finland. Cellulosechemie, 1928, numbers 4/5, pages 38-43.

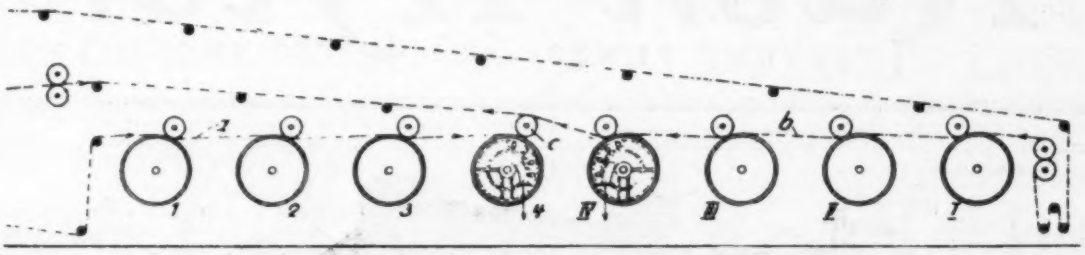
Wire Cylinder for Cardboard and Papermaking Machines

IN THE preparation of cardboard and paper made in several layers and the like from low quality inner layers and higher quality surface layers, it is particularly important that the dehydration of the paper fibers be carried out in a suitable manner. If the fibers are dehydrated in such a fashion that the water content is removed from the outer layers after the cardboard has been made, then the impurities contained in the inner layers are sucked through and into the upper layer of fibers which are of better quality, with the result that these fibers are contaminated with impurities. In order to avoid this, it has been recommended that one paper web be made on a suitable wire to form the surface of the cardboard and the other on another suitable wire for the interior, both webs being separately dehydrated and then united to form the cardboard.

It has however been indicated that in spite of the dehydration of the material directly from the inner parts outward, a certain amount of moisture still remains behind in the cardboard. Hence, the latter must be subjected to an additional dehydration process, which is accompanied with harmful results.

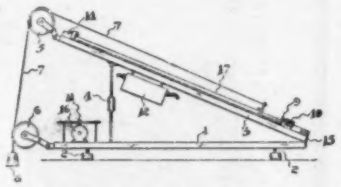
In order to overcome this difficulty, a new process has been devised which consists in using the last cylinder wire of each of the two suction groups as the suction wire, particularly when it is built in the form of a suction roll. This roll serves to remove all of the water from the paper webs shortly before they are joined together to form a single web of cardboard. This dehydration takes place from the inside outwards.

The apparatus which is employed for this purpose is shown in the accompanying illustration. It is provided with two groups of wire cylinders. One group contains the cylinders (1), (2), (3), (4) and the other group contains the cylinders (I), (II), (III) and (IV). The cylinders (1) and (I) produce the surface layers of material on the cardboard, and the cylinders (2), (3), (4), (II), (III) and (IV) produce the inner layers. The cylinders of the two groups rotate in opposite directions. The webs (a) and (b) of the felt run in the direction of the arrow over the cylinders of both groups, and pick up the individual paper webs one after the other. The paper webs, which are placed one on top of the other in this manner and which belong to each group, are now dehydrated by means of the cylinders (4) and (IV) which are made in the form of suction rolls. While the pick-up felt (b) runs in the same direction, the pick-up felt (a) is turned over by the roll (c), so that it is placed with its underside towards the underside of the felt (b). In this way the two paper webs are pressed together, so that the inner layers of fibers come into contact with one another, while the two surface layers lie towards the outside. F. H. Banning and Seybold, Maschinenbau Ges. m. b. H. & Co. Dueren, Germany. German Patent No. 455,729.



Paper Finish Tester

THE instrument which is used for this purpose and which is seen in the accompanying illustration consists of an inclined surface (3) which is made perfectly smooth and on which the paper, which is to be tested, is placed. A drag (9) is moved over the surface of the paper by the application of a predetermined force. The mean rate of movement of the drag is indicated and used in comparison with a predetermined standard. C. H. leP. Jones, Sault Ste. Marie, Ontario, Canada. United States Patent No. 1,668,593.



Feed Water for New Types of High Pressure Boilers

IN ADDITION to the removal of the actual hardness-forming salts in the water it is also necessary to take care to counteract the aggressive carbon dioxide and silicic acid. While the first may be removed by degasification and deacidification, the silicic acid content of the water is best removed by lime-soda softening processes. However, if the boiler feed water contains sufficient free alkali (sodium hydroxide), then the silicic acid will be precipitated.

Gypsum and silicic acid (silica) are the principal scale-forming agents in the boiler, while the carbonates are precipitated rather in the form of a slime particularly in the presence of humic acids or sufficient alkali. Water tube boilers require a water of two degrees hardness and a maximum of four degrees hardness, while high pressure and inclined tubular boilers should be fed with water whose hardness is from one to one and one half degrees at a maximum.

The lime-soda process is recommended for use in treating waters that contain free carbon dioxide, considerable quantities of carbonates, a high silicic acid (silica) or magnesia content. Gypsum-hardness may be destroyed by the simple sodium hydroxide process. In operating the lime-soda process approximately three hours' treatment at a temperature of 50 degrees C. and one and one half hours' treatment at a temperature of 70 degrees C. are required to precipitate the hardness-forming salts. An excess of soda is of no advantage.

The Neckar purification process (soda softening process) finds much use as a slime-conversion process, wherein the slime, formed in the boiler by bye-reactions and the salts are carried back into the purifier.

The Permutit process is suitable for waters that are not too hard and contain a large amount of gypsum and are free from aggressive carbon dioxide. According to the investigations made by K. Schmidt and Splittgerber, the feed water must contain at least 0.4 gram of sodium hydroxide per liter or 1.85 grams of sodium carbonate per liter (alkali protective

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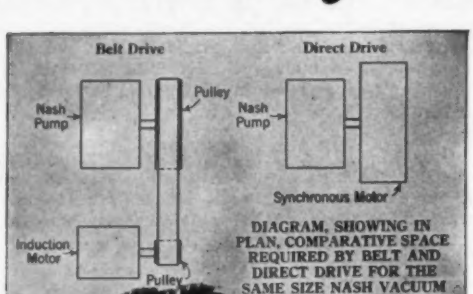

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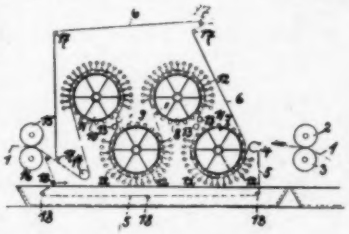
coefficient) corresponding to PH at 20 degrees C. equal to 12.1 or PH at 200 degrees C. equal to 9.4. In this concentration sodium hydroxide protects the iron from being attacked by chlorides nitrates, etc. It is only when the alkalinity is increased one hundredfold that the alkali has an injurious action on the iron. It is commonly possible to delay the blowing out of the contents of the boiler for so long a time until the concentration is increased to two degrees Be. and even high pressure boilers are able to withstand concentrations up to 1.5 degrees Be. without any disturbance arising. The condensed steam should not contain any more than 30 to 35 milligrams of carbon dioxide per liter, two milligrams of carbon dioxide per litertureote per liter, two milligrams of oxygen per liter and five milligrams of ole per liter. Haupt, Wichenblatt Luer Papierfabrikation, volume 58, pages 387-92 and 447 to 51.

Washing Parchmentized Paper Webs

THE paper web (1), shown in the accompanying illustration, emerging from the impregnating bath, is led through the rubber rollers (2) and (3) and is then carried over the roller (4), which serves as a guide roller for the lower carrying felt (5). The upper felt (6) passes under the roller (4) on the paper web, which is carried over the reels (7), (8), (9) and (10). These four reels are driven automatically and carry the paper web along with them as they rotate. They consist of two wheels, which are united together by means of wood laths (11), which are placed cross-wise. Spray tubes (12) are arranged concentrically around the reel, and the sprays of liquid from these spray nozzles are directed against the surface of the paper web. The tension rollers or drying rollers (13) can be arranged between the individual reels. The paper web is sprayed with the liquid from the outer and inner tubes as it passes over the reels (7) and (9) on the under-side. Then in passing over the upper reels (8) and (10), the upper of the paper web is sprayed with the liquor. After the paper web has passed over the last reel (10), it is carried along together with the felt over the guide roller (14) and then it passes from this roller between the rubber-coated rollers (15) and (16), whereat the two endless felts or carrying belts are led over the additional guide rollers and tension rollers (17) and (18).



The automatically operated reels with spray nozzles, built concentrically around their peripheries, which spray liquor over the two sides of the paper web or only on one side, form the main features of the patent. P. Erkens, Germain Patent No. 457,089.

Alkalinity Changes in Making Pulp

THE ordinary titrimetric method of studying the changes of alkalinity of the liquor during the cooking process gives results which are too low for the early stages and too high for the later stages of cooking. When sodium hydroxide alone is present an electrical conductivity method may be used, but when carbonate and sulphide are also present, as in black liquor, a reaction velocity method is more suitable. In the latter, the reaction velocity is measured by means of the catalytic decomposition of diacetone alcohol by alkali into acetone, a unimolecular reaction in which the velocity is proportional to the hydroxyl-ion concentration.

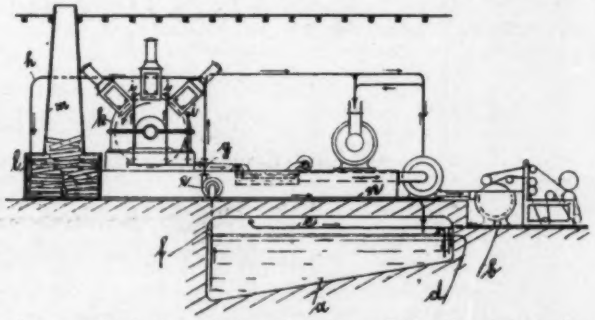
Measurements are carried out in a dilatometer and the constants obtained are approximately proportional to the sodium hydroxide content of the liquor. In cooking with sodium hydroxide alone, a cessation or pronounced decrease in the attack of the wood occurs within the temperature range of 130 to 150 degrees C., while above 160 degrees C. considerable decomposition again takes place. When sulphide is also present, such stagnation is negligible and the alkali content of the liquor decreases uniformly. This process for the manufacture of sulphate cellulose depends on the fact that, although the sulphide itself is a bad decomposition agent, it forms sulphur compounds (lignins containing sulphur) which are more easily attacked by sodium hydroxide than is a wood substance containing no sulphur, the attack taking place rapidly at a temperature of 140 to 160 degrees C. C. Kullgren, Ing. Vet. Akad. Stockholm, year 1927, number 65, 34 pages.

Improving Mechanical Wood Pulp and Utilizing Waste Wood

IMPROVEMENT of the mechanical wood, made from waste wood and low grade wood, is less attained by improvement in the grinder than by special treatment of the wood. An interesting process, which has this for its purpose, is the Sternkopf process (German Patents Nos. 400,049 and 445,-717). This process depends on the principle that the degree of softening is due not so much to the temperature but to the pressure at which the steaming and cooking are effected. Other investigations have shown that it is possible to attain the effects, that are customarily secured in the manufacture of steamed mechanical pulp by the use of high pressures without chemicals, by simply treating the wood, provided it is not composed of too large pieces, in open vessels with hot water.

An apparatus which is used in the manufacture of mechanical wood pulp so that the least amount of power is consumed as well as heat and labor is shown in the accompanying illustration. The hot and cold waste water is mixed in a tank, so that the mixed water always has the same temperature. This water can be very easily purified. The water can thus be fed to the stone and also to the softening tanks in which the wood is directly heated before being ground.

Referring to the figure, (a) is a tank or container which may be placed either over or under the grinder. The waste water runs into this tank through the pipe (b). Exhaust steam may be added through the pipe (c) and condensate through the pipe (d). A pump removes the purified water,



when required, through the pipe (f) and the line (g) to the spray nozzles (i) of the grindstone (k). The pump also supplies the softening tank (l) with hot water through the pipe (h). The wood is fed into this softening tank through a feeding device (m), is softened and removed when necessary. The wood in the softening tank is not only warmed but actually softened. A constant lever of water exists at all times in the softening tank (l) and hot water is always entering through the pipe (h) and the cooled water flows back to the tank (a) through the pipe (n). Regulating devices of an automatic character may be provided to maintain the temperature of the water at a constant point. Der Papierfabrikant, 1928, 253ff.

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IN A GENERAL sense, the market for paper is fairly active, according to most reports. There is buying of steady character noted, since the cautious operations of a majority of consumers and jobbers are the means of keeping them in evidence as purchasers almost all the time. However, the market is far from satisfactory to paper manufacturers and distributors. Buyers are confining their activities so strictly on a hand-to-mouth scale that producers are occasioned some difficulty in filling the wants of customers, because paper business in some quarters is getting down to a day-to-day or week-to-week proposition, with mills unable to guage even the immediate requirements of their patrons. Moreover, the demand—from an aggregate viewpoint—is not measuring up to a volume which paper manufacturers would like to see. There is a big potential paper productive capacity which is not being utilized, by which is meant—in simpler words—that many mills are operating on a curtailed basis because they are unable to find an outlet for their full production, and this obviously is a factor hanging over the market and doing it no good as it leads to some selling pressure and consequently creates a certain degree of uncertainty and instability in market prices.

Probably the feature of the market in the last several weeks has been the disturbance noted in prices of some classes of paper. This, it might be stated, is more or less of a seasonal development. With the summer approaching and with it the period of low paper consumption and the dull season for paper merchandizing, there are manufacturers who are bending every effort to book orders ahead with a view to corralling as much business as they can prior to the mid-year quietness in the market. Prices therefore have eased in some instances, though the changes that have been recorded in quotations have been of spotty character and can be said to have been mostly of individual instance. As usually is the case, a weakening tone in prices has prompted many buyers to exert greater care in placing orders, which in addition to the fact that very few consumers of paper are engaging in any buying at present other than to satisfy actual and direct needs, is making for a quieter market.

Weighing all the circumstances, it appears as if the outlook is fairly favorable. This much can be said in behalf of market prospects, namely, that demand is of such restricted proportions as regards any anticipating of requirements that it is just about assured paper buyers will find it necessary to keep active in the market right along through the late spring and summer. In the old days the market was accustomed to slowing down to a marked degree in the summer; consumers covered up their wants over the "dog days" and were enabled to refrain from further buying for a time, but under the present method of acquiring supplies of paper, it will be necessary for buyers to continue operating in the market without a let-up—provided, of course, their requirements hold up to normal. On the other hand, there seems little question that the condition of the market over the next several months will depend in large measure on the attitude of paper manufacturers themselves. If they adopt a firm price policy and strive to maintain market prices and keep quotations stabilized, the probabilities are demand will continue at least moderately active; if, however, they throw discretion to the winds and proceed on the theory of getting orders regardless of price stability, and thereby create an irregular price situation, there is no doubt whatever that demand will be affected adversely and that the scope of the market during the summer period will be narrowed appreciably.

There has been a sagging of quotations on newsprint. Mills in some cases have reduced the contract price slightly, thus recording the first change in the newsprint price basis since the beginning of 1926. Reports state that some of the large print paper manufacturing companies in the United States and Canada have lowered the contract price of newsprint $2 to $3 per ton, and some as much as $5. These cuts are explained as being nothing more than equalization of freights, but they nevertheless constitute a saving to consumers. The International Paper Company is reported signing contracts for newsprint for 1929 at a reduction of $3 a ton. The price f.o.b. mill represents a cut of $2, while freight allowance reduces the price another $1. The contract price of $65 a ton f.o.b. mill for standard news in rolls, which became effective on January 1, 1926, and which has been maintained ever since thus is lowered to $62. The easing of newsprint prices had its inception, it is said, in the withdrawal of several of the big Canadian manufacturing companies from the Canadian Newsprint Export Association in order to market their paper individually.

Book paper prices display an easing trend also. Mills are competing keenly for business and in some instances are shading prices as an inducement to consumers. Box board quotations have moved to slightly lower levels, reflecting the quiet season and a consequent slackening of demand. Tissue paper prices are none too firm, while wrapping paper quotations are maintained though displaying something of a soft undertone. Quotations on fine papers of the better qualities are steady but there is some shading of mill rates on the cheaper grades.

Newsprint output in April totaled 192,645 tons in Canadian mills and 117,553 tons in United States mills, according to the News Print Service Bureau, contrasted with 197,976 tons and 119,932 tons, respectively, in the previous month, making a total for both countries of 310,198 tons in April, contrasted with 317,908 tons in March. Shipments from Canadian mills in April were 193,443 tons, against 190,305 tons in the preceding month, and from U. S. mills 118,453 tons, compared with 113,752 tons in March. During April 17,772 tons of newsprint were made in Newfoundland and 1,025 tons in Mexico, so that the total North American for the month amounted to 328,995 tons. The Canadian mills produced 114,028 tons more of newsprint in the first four months of 1928 than in 1927, which was an increase of 17 per cent. The United States output was 47,385 tons, or 9 per cent, less than in the first four months of last year; that in Newfoundland was 6,115 tons, or 9 per cent more, and that in Mexico was 280 tons more, making a total North American increase of 73,038 tons, or 6 per cent over the first four months of 1927. During April the Canadian mills operated at 84.3 per cent of their rated capacity and the U. S. mills at 83.8 per cent. Stocks of newsprint at Canadian mills totaled 46,641 tons at the end of April and at U. S. mills 33,734 tons, making a combined total of 80,375 tons, which was equivalent to 5.5 days' average production.

Paper board production in the United States declined slightly during April, the total for that month reaching 219,012 tons, compared with 227,573 tons in March, according to the monthly statistical summary of the board industry compiled by the Department of Commerce in Washington. Production in the first four months of this year was 864,716 tons of board, contrasted with 788,315 tons in the similar period of 1927. Shipments of board from mills amounted to 218,214 tons in April, against 237,807 tons in March, and stocks of board at mills at the end of April totaled 40,312 tons, contrasted with 40,424 tons a month previously. Manufacturers had orders calling for a total of 84,513 tons of board at the end of April, against 94,065 tons at the close of March.

The March index production figure for the paper industry was 105, compared with 98 for February and 116 for March last year, taking 1919 at 100 per cent, according to the U. S. Department of Commerce.

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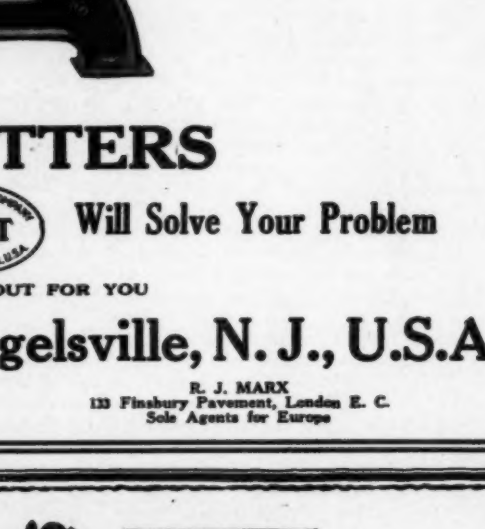


"From now on, that form order is standard, Miss Jones. You will send it to the Diamond Alkali Company every 30 days until further notice. That will automatically keep us supplied with dependable alkalies without further bother on our part.

Diamond Alkalies are unreservedly guaranteed to be full test and our people like the way they ship our orders."

ALKALI

Diamond Alkali Co.

Pittsburgh, Pa.
and everywhere!

Papermaking Rags

Principal activity in papermaking rags is confined to a few grades, and the market in its entirety continues quiet. There are spots in the trade where business is developing in a fair way, and with moderate steadiness, but in a general sense the demand for rags for papermaking purposes is not measuring up to normal, so most dealers and importers assert. This is believed to be nothing more than a reflection of the diminished consumption of rags of many kinds by paper mills; there being instances cited where certain fine paper plants which formerly were heavy users of rag stock are now consuming little or no rag fibre while producing practically all of their paper of wood pulp. This situation, it is claimed, is really much more serious from the point of view of the rag dealer and importer than a majority in the trade are willing to accept. Competition in the fine paper market has obliged many paper manufacturers to curtail their output of high-grade rag-content papers and increase their production of sulphite bonds, ledgers and writings, and it is an established fact that wood papers have supplanted rag-content paper to an extensive degree—to such an extent that the market for papermaking rags is feeling the effects emphatically.

One of the bright spots in the rag situation is the continued good demand for the lowest class of papermaking rags or roofing stock. Roofing felt mills are absorbing supplies in a consistent manner, and in some few instances they have found it advisable to raise their prices a shade to secure all the rags desired. The price tone in roofing rags is firm decidedly. Domestic supplies are being taken off the market by buyers about as rapidly as the stock becomes available, and importations of roofing rags are well under an average tonnage, owing to the relatively higher prices prevailing in the European markets than in this country which make it difficult for American importers to buy abroad profitably. Sales of No. 1 domestic roofing stock or cloth strippings have been made at 1.90 to 2 cents per pound f.o.b. dealers' shipping points, and No. 2 domestic roofing at 1.50 cents. Foreign old dark colored cottons have sold quite readily to roofing mills at 1.60 cents a pound ex dock New York for forward shipment abroad and in some cases consumers have paid 1.65 cents, while foreign linsey garments have brought 1.85 cents ex dock New York. Dealers are reported well fixed with orders for roofing rags, the consumption of which appears to be on a fairly high level, and indications are that the present supply condition is more in favor of sellers than of buyers.

New cuttings of some descriptions are moving fairly actively and are firm quotably. The general situation in new rags, however, is quiet, and there has been a little sagging of market values, brought about by the eagerness of dealers for orders and the unwillingness of paper manufacturers to buy other than actually and immediately needed supplies. No. 1 new white shirt cuttings are reported slightly lower in price to where sales to mills have been made at 11.50 cents a pound at dealers' points, and probably a bit under this level. Fancy shirt cuttings have been reported sold at 5.25 cents at shipping points, No. 1 washables at 4.25 cents, and light silesias at 7.25 cents. Unbleached muslin cuttings, on the other hand, are firm at 10 to 10.25 cents a pound at dealers' shipping points, as are blue overall cuttings at 6.75 to 7 cents, and bleached canton flannels at 9.25 to 9.50 cents.

Old whites and thirds and blues are wanted in strictly routine volume, and prices show scant change. Consumers apparently are obtaining all these rags they require without disturbing prices in the least, and most of the sales of No. 1 repacked old whites are reported around a price basis of 5.50 to 6 cents a pound at shipping points, of No. 2 repacked whites at 2.75 cents, and of repacked thirds and blues at 2.25 cents.

Foreign rags are in slow demand. There is fair activity in roofing mill grades, and occasional sales of fibre mill rags and some of the better qualities for papermaking, but importers in general report the market quiet.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	11.25-11.75
White shirt cuttings, No. 2	7.25- 8.00
Fancy shirt cuttings	5.25- 5.50
Washables, No. 1	4.25- 4.50
Unbleached muslin	10.00-10.25
White lawns	9.25- 9.50
Overall cuttings, blue	6.75- 7.00
Black silesias	4.50- 4.75
Light flannelettes	8.00- 8.25
Canton flannels, bleached	9.25- 9.50
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	8.25- 8.50
Shoe cuttings, unbleached	6.50- 6.75
Light silesias	7.25- 7.50
O. D. khaki cutting	5.50- 5.75
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.25- 3.50
Linens, No. 1, white foreign	13.00-14.00
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1, repacked	5.50- 6.50
Whites, No. 2, repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.75- 1.90
Thirds and blues, repacked	2.15- 2.35
Black stockings	4.00- 4.25
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	4.75- 5.25
Roofing, No. 1 (cloth strippings)	1.85- 2.00
Roofing, No. 2	1.50- 1.60
Linsey, garments, foreign	1.80- 1.85
Dark colored cottons, foreign	1.60- 1.65
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

Paper mills are buying old rope in a fairly steady manner and are granting firm prices. The market, in fact, is moderately active, and a factor which is having considerable effect is that available supplies of desirable quality old rope are subnormal, according to dealers. Imports are on a fair scale, which helps to relieve the limited incoming supply of domestic old rope. No. 1 domestic old manila rope is fetching 3.25 to 3.50 cents a pound at dealers' shipping points, and there have been cases noted where slightly higher has been paid for extra quality rope, while No. 1 foreign old manila is reported selling at 3 cents a pound ex dock New York. One of the large paper mill purchasing agencies is reported buying old rope freely abroad, and paying 3 cents landed at American ports in direct purchases from European shippers. Strings are in relatively good call also, and are steady quotably at around one cent per pound at shipping points for mixed strings, and 1.50 to 1.75 cents a pound for sisal strings.

Most of the current movement of scrap bagging is to roof-

ROSIN SUPERIOR SIZE

SUPERIOR CHEMICALS

TRADE MARK

CHEMICALS AND SERVICE

PRODUCTS

ROSIN SIZE

WAX AND SPECIAL WATERPROOFINGS

FOAM KILLERS

FELT SOAPS

SOAP POWDER

VEGETABLE TALLOW

Twenty-two SUPERIOR Plants

The Most Extensive Organization of Its Kind in the World

Producing, Distributing and Servicing Chemical Products for the Pulp, Paper and Coating Trades

"There Is a SUPERIOR Plant Near You"

PRODUCTS

SATIN WHITE

ENGLISH AND DOMESTIC CLAYS

CASEIN

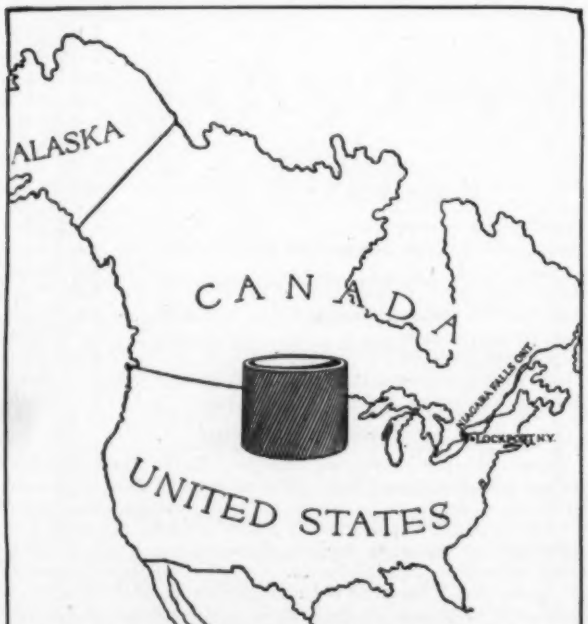
CASEIN SOLVENTS

SOFTENERS

DRY AND PULP COLORS

TURKEY RED OIL

Paper Makers Chemical Co., Easton, Pa., Holyoke, Mass.
Western Paper Makers Chemical Co., Kalamazoo, Mich., Pensacola, Fla., Jacksonville, Fla., Savannah, Ga., Comstock, Mich.
C. K. Williams & Company, Easton, Pa., Emeryvilla, Cal., Malaga, Spain.
Georgia-Louisiana Company, East Point, Ga., Marrero, La.
Superior Pine Products Company, Fargo, Ga., Tarver, Ga.
Empire Size & Chemical Co., Albany, N. Y.
Adirondack Mineral Co., Carthage, N. Y.
Superior Sizing Company, Lockport, N. Y.
Paper Makers Importing Co., Easton, Pa., St. Austell, Cornwall, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ontario
Vera Chemical Corporation, Stoneham, Mass.
Vera Chemical Company, North Milwaukee, Wis.
John Regnier & Son Company, Boston, Mass.
George S. Mepham & Company, East St. Louis, Ill.
Pochins & Paper Makers Chemicals, Ltd., Erith, Kent and Manchester, Eng.



F.W. ROBERTS MFG. CO. INC.
LOCKPORT N.Y. U.S.A.
F.W. ROBERTS MFG. CO.
OF CANADA LTD.
NIAGARA FALLS ONT.
MANUFACTURERS OF
PAPER & PULP MILL SPECIALTIES

1864 1928

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY,
75-77 Duane Street, N. Y.
and direct

ing paper mills, and quoted prices are on unchanged levels. No. 1 scrap is bringing 1.60 cents to slightly higher per pound at dealers' points, and roofing bagging 1.30 to 1.35 cents.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.65-1.80
Gunny, No. 1 foreign	1.60-1.70
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.25-1.35
Wool tares, heavy	2.25-2.50
Wool tares, light	2.00-2.25
Manila rope, No. 1 foreign	3.00-3.25
Manila rope, No. 1 domestic	3.25-3.50
Sisal strings	1.50-1.75
Mixed strings	.90-1.10

Old Paper

Strong demand for book stock and firmness in prices of such grades, and a fairly good call for ledgers, old mixed paper and certain other grodes, are the outstanding features in the waste paper market. Consumers of old books and magazines are absorbing such stock freely and are paying prices relatively above those prevailing on some other descriptions of old paper. As much as 1.90 cents a pound f.o.b. shipping points has been granted for No. 1 heavy books, and 1.60 cents for No. 1 crumpled book stock, and the market condition is such that it appears likely prices will score a further advance. Ledgers and writings are moving steadily on a price range of 1.70 to 2 cents a pound at dealers' points, depending on the quality of packing. Soft white shavings are reported in somewhat better demand, and sales of special quality packing have been recorded at 2.50 cents a pound at shipping points although the more common quotation on soft shavings of average grade is around 2.25 cents per pound. Shavings in a general sense are rather quiet, and No. 1 hard white are reported available at 2.70 and 2.75 cents a pound at shipping centers and possibly at less than this basis.

No. 1 mixed paper is selling in the East at 45 cents per pound f. o. b. New York, while in the Middle West mills are paying well above this price. Similarly, folded news is fetching 60 to 65 cents in the East, and $2 and $3 per ton higher in the West. Kraft grades are comparatively quiet and the prices quoted are around 1.90 cents a pound for No. 1 old kraft, and 2.50 cents for new kraft cuttings.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.70-3.00
Hard white shavings, No. 2	2.50-2.75
Soft white shavings	2.20-2.50
Colored shavings	1.00-1.25
Heavy book, No. 1	1.85-1.90
Crumpled book, No. 1	1.50-1.60
Ledger stock	1.70-2.00
Kraft, No. 1	1.90-2.00
New kraft cuttings	2.50-2.75
Manilas, No. 1	.75- .85
White blank news	1.40-1.50
Overissue news, No. 1	.70- .85
Folded news	.60- .75
Sulphite mill wrippings	.70- .80
Old corrugated boxes	.65- .70
New corrugated box cuttings	.80- .90
Mixed paper, No. 1	.45- .60
Common paper	.35- .40

Pulpwood

The in-between season finds little activity of a current character in pulpwood. There is, of course, a ready movement against contracts and back orders, but new business is slow and the market is developing little definite change. Prices prevailing in the Maine district of New England are reported between $16 and $17 per cord for peeled wood delivered at pulp mills, and $13 to $15 a cord for rough wood.

Exports of pulpwood from Canada in March, all of which

GDC

THE G D C POLICY

QUALITY FIRST

For the Coloring of Bond Papers

If you are confronted with two-sidedness we especially recommend

FAST BOND YELLOW N T G G
FAST BOND ORANGE N T G R
FAST BOND SCARLET N T R R
FAST BOND GREEN N T G G
FAST BOND BLUE N T G B
FAST BOND BLUE N T B B

EXCELLENT FASTNESS TO LIGHT

NEKAL B EXTRA

An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

230 Fifth Avenue, New York, N. Y.

Boston, Mass. Philadelphia, Pa.
Chicago, Ill. Providence, R. I.
Charlotte, N. C. San Francisco, Cal.

Also Sole Agents for

Grasselli Dyestuff Corporation

Albany, N. Y. and Grasselli, N. J.

GENERAL DYESTUFF CORPORATION

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY

17 Battery Place, New York City

Cut your cost of Production
Improve your Quality
Increase your Profits
by
The use of Efficient Equipment
for
1. Woodpreparing
2. Acidmaking
3. Cooking
4. Screening
5. Dewatering
6. Drying

We cover the whole field

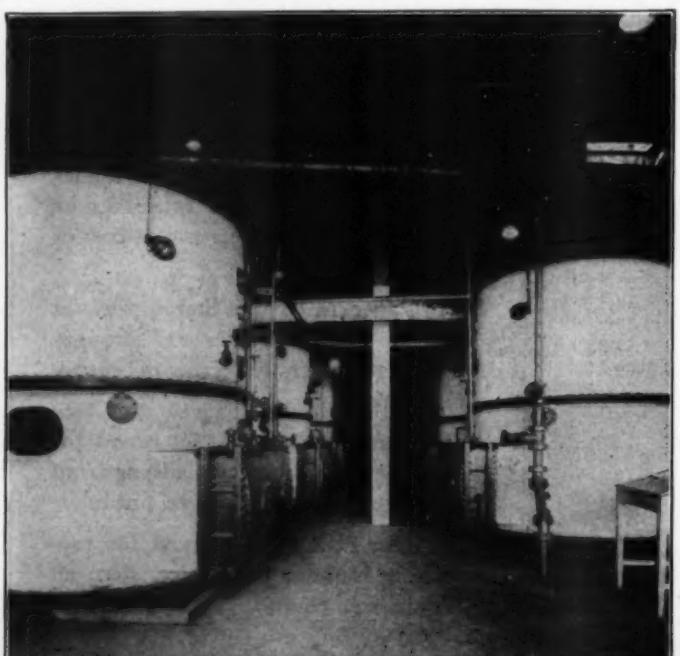
G. D. Jenssen Co.
200 Fifth Ave., New York City
Sole Representatives
For: Paper Machinery, Ltd.
Montreal, Quebec

Sulphur

A FIRST REQUISITE
IN
Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO.
41 E. 42nd Street New York City
Mine Gulf, Matagorda County, Texas



SULPHATE BLACK LIQUOR

THREE
ZAREMBA
TRIPLE EFFECT
EVAPORATORS
TWO OF WHICH WERE
RECENTLY INSTALLED
DURING EXPANSION
OF
BROWN PAPER MILL CO.,
MONROE, LA.

ZAREMBA COMPANY
506 Crosby Bldg. Buffalo, N. Y.
New York City Office: 95 Liberty St.

came to the United States, amounted to 180,111 cords, valued at $1,554,835, compared with 215,834 cords of a value of $1,956,625 in March last year. For the twelve months ended with last March exports totaled 1,501,612 cords, valued at $15,182,842, contrasted with 1,536,485 cords of a value of $15,400,343 in the previous similar period.

Mechanical Pulp

Ground wood prices exhibit a firmer undertone, and there is visible proof that producers in certain cases are refusing flatly to accept orders below well-defined price levels. Grinders in Canada, for instance, are in some cases demanding $25 per ton f.o.b. pulp mills for prime freshly-ground ground wood, and while purchases are being effected at a little under this price, manufacturers in the first-named cases are holding firm for the figure mentioned. Domestic ground wood is nominal in price at around $27 per ton at grinding plants, and imported ground wood of Scandinavian origin is quoted at $31 to $32 per short ton ex dock American Atlantic ports.

During March production of mechanical pulp in the United States amounted to 93,391 net tons, contrasted with 85,751 tons in the preceding month, while stocks at producing mills at the end of March totaled 100,873 tons, against 100,631 tons a month previously, according to statistics compiled by the American Paper and Pulp Association.

Chemical Pulp

Chemical wood pulp quotations are well maintained and the market displays a steady undertone. Domestic manufacturers are reported fairly well fixed with orders for pulp and are not pressing sales, evidently appreciating that price concessions would hardly induce consumers to buy at present unless they are in actual need of additional supplies. Moreover, the statistical position of pulp is firm, what with the big loss in output in Sweden owing to the shutdown of mills in that country early this year, and prospects are favorable for a steady market condition throughout the rest of the year, with a proportionately good call for domestic pulps.

The most popular brands of domestic bleached sulphite are quoted at 3.75 to 4 cents per pound f.o.b. pulp mills, and demand for this class of pulp is reported moderately good. Easy bleaching sulphite is quoted at 2.75 to 3 cents at producing plants, No. 1 strong unbleached sulphite of news quality at 2.50 to 2.75 cents, and No. 1 book grade sulphite at 2.75 to 3 cents. Bleached soda pulp is on a price level of between 3 and 3.25 cents a pound f.o.b. pulp mills, and No. 1 kraft pulp at 2.75 to 3 cents.

Mills in the United States produced a total of 129,302 net tons of chemical pulp in March last, compared with 118,092 tons in February and 127,797 tons in January, according to the American Paper and Pulp Association. Mill stocks at the end of March amounted to 26,464 tons, against 26,664 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.75-3.00
Soda pulp, bleached	3.00-3.25
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

Most paper and pulp chemicals display a steady price tone, and are reported moving into consuming channels in fairly good quantities. Bleaching powder is quoted at an unchanged price range of 2 to 2.35 cents a pound f.o.b. works, soda ash is steady at 1.32½ cents per pound for shipments in bags at works, and caustic soda is selling at 2.90 to 3 cents a pound for the solid product for prompt shipment f.o.b. shipping points. Casein is quoted around 16 cents a pound for domestic, and slightly higher or about 16.75 to 17 cents for the imported article.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00

SOLVAY PRODUCTS

SODA ASH

CAUSTIC SODA

Liquid Chlorine

Contract or Spot Delivery

In tank cars and multiple unit cars.

Write for Prices

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK

Boston Syracuse Chicago Indianapolis Cleveland Cincinnati Pittsburgh Detroit Philadelphia Kansas City St. Louis Atlanta

Uncle Jake says—

"Worry will whittle off a man's efficiency faster than a boy with a sharp jackknife can sharpen a pine stick."

One of your worries can be eliminated by using

KVP PAPERS

We do the worrying and make sure that these papers are as perfect as it is possible to make them before they leave our mill.

Let us send you samples.

KALAMAZOO VEGETABLE PARCHMENT CO. KALAMAZOO, MICH.

We Specialize In:

PAPER
PULP
LUMBER
TIMBER
SECURITIES

BOUGHT—SOLD—QUOTED

H. D. KNOX & CO.

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27 State Street, Boston, Mass.

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In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.

New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Books—	
No. 1 S. & S. C.	5.75- 8.00
Machine finished	5.50- 8.00
English finished	5.50- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.00-15.00
Newsprint—	
Rolls, contract	3.10-....
Rolls, transient	3.50-....
Sheets	3.65- 3.80
Side runs	3.00- 3.25
Cover stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .90
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	5.75- 6.25
No. 2 kraft	4.50- 5.00
Southern kraft	4.25- 4.75
Boards	New York and Chicago
Solid news	45.00-50.00
Straw	52.50-57.50
Plain chip	40.00-42.50
White coated chip	50.00-55.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemicals

(*Continued from page 559*)

Blanc fixe, powder	4.00 - 4.25
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -20.00
Casein (duty paid)	16.00 -17.00
Caustic soda, spot delivery	2.90 - 3.00
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, Grade E	8.80 - 8.90
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	4.12 -....
Talc (ton)	16.00 -18.00

At a recent meeting of the board of directors of Electro Bleaching Gas Co., S. W. Jacobs was elected vice-president. Mr. Jacobs will continue to make his headquarters at the main sales office of the company, 9 East 41st St., New York City.

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities when we will endeavor to furnish actual markets.

BONDS	Bid	Asked
A. P. W. Pulp & Paper Co. 6s, 1948		100
Abitibi Fibre Co. 6s, 1947	101	102
Abitibi Power & Paper Co. 6s, 1931	101	102
Abitibi Power & Paper Co. 6s, 1940	105	106
American Sales Book Co. 6s, 1939	102½	
Advance Bag & Paper Co. 6s, 1952	99½	
Bastrop Pulp & Paper Co. 6½s, 1940	104¾	
Brush Moore Paper Co. 6½s, 1937	97	98¼
Beaver Products Co. 7½s	110	112
Beaver Board Co. 8s, 1933	101	
Bedford Pulp & Paper Co. 6½s, 1942	98	100
Belgo-Canadian Paper Co. 6s, 1943	103	104
British Columbia Pulp & Paper Co. 6s, 1950	90	92
Brompton Pulp & Paper Co. 6s, 1935	102½	
Brompton Pulp & Paper Co. 6s, 1946	104½	
Brown Company 5½s, 1946	102	
Bryant Paper Company 6s, 1942	100	101
Celotex Company 6s, 1936	OW	100
Celotex Co. 6½s, 1939	100	101½
Canada Paperboard Co. 7s, 1937	98½	100
Central Paper Company 6½s, 1941	86	89
Central Paper Co. 6s, 1933	86x	89
Central Paper Co. 7s, 1932	87	92
Champion Fibre Co. 6s, 1941	101½	102¼
Champion Paper Co. 6s, 1945	95	98
Champion Coated Paper Company 6s	102½	
Columbia River Paper Mills 6s	98	
Defiance Paper Co. 6s, 1939	98	100
Dells Paper & Pulp Co. 6s, 1939	95	98
Donnacona Paper Co. 5½s, 1948	97½	98½
Fastern Manufacturing Co. 7s, 1938		
Escanaba Paper Co. 6s, 1939	98	102
Escanaba Paper Co. 5s, 1928	99	101
Filer Fibre Co. 7s, 1937	93	
Fort William Paper Co. 6s, 1946	101	102
Fitchburg Paper Co. 5s, 1929	99	
Glatfelter Paper Co. 6s, 1938	104	106
Hammermill Paper Co. 6s, 1939	101½	
Hartje Paper Company 6s	1½	
Hawley Pulp & Paper Co. 6s, 1946	99½	
Hoberg Paper & Fibre Co. 7s, 1937	94½	96½
Industrial Fibre Co. 8s	100	102
Itasca Paper Company 6s	99	
Itasca Paper & Prairie River 5½s	100¼	
Jessup & Moore Paper Co. 6s, 1945	90	92
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Manitoba Paper Co. 6½s	103	105
Mead Fibre Company 7s, 1937	100	
Munising Paper Co. 6s, 1936	98	
Marathon Paper Mills 5½s, 1942	99	
Marinette & Menominee Paper Co. 7½s, 1936	103½	104½
Mead Pulp & Paper Company 5s	95½	
Mengal Company 7s, 1934	103	105
Mengal Company 7s, 1933	101	
Minnesota & Ontario Paper Co. 6s	99½	101¼
Missisquoi Pulp & Paper Company 7s, 1929	99½	
Missisquoi Pulp & Paper Co. 6s, 1945	99	
Monroe Paper Products 7½s, 1932	97	99
Murray Bay Paper Co. 6½s	102¾	103½
Orono Pulp & Paper Co. 6s, 1943	102	
Orono Pulp & Paper Co. 5s, 1941	97	
Oswego Falls Paper Co. 6s, 1941	99	102
Parker Young Co. 6½s, 1944	99	100½
Paper & Textile Machinery Co. 7s	100	103
Paterson Parchment Paper Co. 6s, 1938	101½	102½
Peerless Paper Company 6s	98	100
Penobscot Chemical & Fibre Company 6s, 1942	102½	105
Price Bros. 6s, 1943	106	108
Queen City Paper Co. 7s, 1933	97	99
Riordan Pulp & Paper Co. 6s, 1942	102	
River Raisin Paper Co. 6s, 1936	98	101
Roland Paper Co. 6s, 1937	99	101

(*Continued on page 569*)

QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company
Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

The Pulp and Paper Trading Co.
21 East 40th Street New York City

Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
J. & J. ROGERS COMPANY, Ausable Forks, N. Y.
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.
21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

PULP

PERKINS-GOODWIN CO.
Established 1846
551 FIFTH AVENUE, NEW YORK

PAPER

EXPORTS

Exports of paper from the United States in March, 1928, showed a considerable increase in point of value as compared with the preceding month and also as contrasted with the corresponding month of last year. During March the total value of paper exports of all kinds from this country reached $2,740,820, as against exports of a value of $2,387,926 in February this year, and $2,549,897 in March a year ago. During the first three months of the current year, exports of paper were valued at $7,552,056, compared with shipments of a value of $6,818,639 in the similar period of 1927, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington.

Exports of newsprint gained substantially in March as contrasted with February, amounting to 1,707,788 pounds valued at $63,014 in March last, compared with 1,077,990 pounds of a value of $42,237 in the preceding month, but were well under the 3,296,466 pounds of a value of $153,287 exported in March of last year. Exports of book paper, not coated, in March amounted to 1,581,957 pounds, valued at $129,625, against 982,965 pounds of a value of $91,931 in the same month a year ago, while shipments of wrapping paper out of the country in March were 2,688,974 pounds, valued at $200,064, contrasted with 2,807,035 pounds of a value of $194,751 in March, 1927.

Box board exports fell from a total value of $118,457 in March last year to $79,523 in the similar month this year, while shipments of other paper board were $179,805 last March, against $179,192 in March, 1927. Tissue paper exports scored a gain in March when they were valued at $111,918, compared with $78,636 in the same month a year ago, and writing paper exports increased in value from $199,810 in March last year to $257,311 in the corresponding month this year.

Exports of paper towels and napkins from the U. S. were valued at $37,263 in March last, against $27,473 in the same month of 1927.

IMPORTS

Wood Pulp

A steady price tone obtains in imported wood pulp notwithstanding that demand from consuming quarters recently has been decidedly restricted. Most paper manufacturers have held off buying pulp since the announcement that the strike in the Swedish pulp industry has been settled. Apparently, the common belief among consumers in the United States is that there will be no scarcity of pulp of any sort, even though the tremendous loss of production during the period of the lockout in Sweden probably will eliminate any likelihood of a surplus of supply on the market, and as most paper mills in the United States have their requirements provided for over a fair length of time through purchases of first open water shipments from Scandinavia, there has not been much eagerness indicated to add to commitments. The movement of spring shipments of sulphite and kraft pulps out of Sweden is now in full force, and some fairly large arrivals have reached American ports in the last few days. These supplies, together with other quantities due to be received shortly, should relieve any tightness in the supply situation that previously existed here.

At the same time, market price levels are well maintained, and the price tone is characterized by noticeable firmness. One reason for this in the face of the limited buying by consumers is that sellers have not pressed matters. Few importers or agents in New York have much pulp to offer out to their mill customers, owing to the sold-up position of their principals abroad, so that those on the selling side of the trade have pursued a more or less waiting and watchful policy also. The belief is general that pulp market values will rule steady during the balance of this year; in fact, importers say they do not see why there should be any downward reaction in prices at all—if the statistical condition of the market means anything—and producers consequently are not exerting any undue efforts at this time to make sales, feeling that when consumers are more in need of supplies they will very readily come into the market as buyers.

Imports of wood pulp into the United States in March declined fairly sharply, which was a seasonal situation. Usually importations in the first two months of the year are heavy—as they are this year—whereas in March the Baltic is frozen over and shipments out of Sweden are stopped for the winter so that arrivals at U. S. ports show a corresponding decline. During March a total of 74,536 long tons of chemical pulp, valued at $4,487,328, was imported into the United States, compared with 116,632 tons imported in the preceding month, 140,394 tons in January this year, and 87,906 tons in March last year. Imports during the first three months of 1928 amounted to 31,562 tons, giving a monthly average of 110,520 tons for the period, and recording an apreciable increase over the 305,627 tons imported in the similar time a year ago. Imports of ground wood in March last were 18,861 long tons, valued at $455,967, contrasted with 18,885 tons of a value of $488,850 tons imported in the preceding month, and 20,027 tons of a value of $580,721 in March last year, while during the first three months of the current year ground wood imports totaled 56,569 tons, against 47,796 tons in the same period of last year.

Bleached sulphite of prime quality is quoted at 3.75 cents per pound upwards ex dock New Yark or other American Atlantic ports, depending on the grade of the pulp concerned, while strong prime unbleached sulphite is quoted at 2.70 to 2.80 cents on the dock, prime easy bleaching sulphite at 2.85 to 2.90 cents, and ordinary Mitscherlich unbleached sulphite at around 2.65 cents. Prime standard Swedish kraft pulp is steady in price at 2.70 to 2.80 cents ex dock. Scandinavian ground wood is quoted at $31 per short ton ex dock New York for dry pulp.

Current market quotations ex dock New York, and receipts at the port of New York during May, follows:

Bleached sulphite, No. 1	3.75	4.00
Unbleached sulphite, strong No. 1	2.70	2.85
Unbleached sulphite, No. 2	2.50	2.60
Easy bleaching sulphite	2.85	3.00
Mitscherlich unbleached, genuine	3.00	3.25
Mitscherlich unbleached, ordinary	2.60	2.75
Kraft, standard Swedish	2.70	2.80
Ground wood, per ton (dry)	31.00	32.00

Atterbury Bros., 288 bls. from Bremen and 500 bls. Oslo; Buck, Kiaer & Co., 800 bls. from Stockholm; J. Andersen & Co., 6,304 bls. from Sarpsborg and 390 Trieste; Borregaard Co., 1,836 bls. from Sarpsborg; M. Gottesman & Co., 1,960 bls. from Rotterdam and 4,400 Sebenico; Chase National Bank, 1,625 bls. from Oslo; E. M. Sergeant Co., 1,474 bls. from Gothenburg and 160 Oslo; E. J. Keller Co., 1,508 bls. from Hamburg; Castle & Overton, 1,718 bls. from Hamburg; Bank of New York & Trust Co., 450 bls. from Oslo; Perkins-Goodwin Company, 125 bls. from Oslo; International Acceptance Bank, 800 bls. from Oslo; Chemical National Bank, 360 bls. from Oslo; Cellulosa Cubana, 151 bls. from Havana; American Exchange Irving Trust Co., 294 bls. from Trieste; Parsons & Whittemore, 150 bls. from Gothenburg.

Paper Stock

Imports of papermaking materials into the United States

Morey Paper Vulcan TRADE MARK **Mill Supply Co.**

99 CHAUNCY St. BOSTON, MASS.

Sole Selling Agents

"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

RUSS GELATIN CO.
WORKS—WESTFIELD, MASS.

MANUFACTURERS OF
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ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON
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LIQUID CHLORINE

Single Unit Tank Cars — 150-Lb. Cylinders
Multi-Unit Tank Cars — 1-Ton Containers

Commercial Sulphate of Alumina
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Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

ARE YOU BUYING A NEW MACHINE?

INSURE SUCCESS
SPECIFY OUR COVERINGS

STOWE & WOODWARD COMPANY
NEWTON UPPER FALLS, MASS.

during May were on a fair scale, judging from receipts at the port of New York. There were some fair-sized shipments of rags, and arrivals of miscellaneous paper stock ran into moderately big quantities. Receipts of all kinds of paper-making material other than wood pulp at New York in May were as follows, these data being taken from manifests of steamers reaching that port during the month:

Old Rope—William Steck & Co., 149 bls. and 66 coils; American Exchange Irving Trust Co., 276 bls.; Brown Bros. & Co., 237 bls. and 369 coils; United Fruit Co., 8 bls.; Ellerman's Wilson Line, 196 bls.; Montell & McDonough, 8 bls.; N. E. Berzen, 36 bls.; United Fibre Co., 27 rolls; W. Schall & Co., 33 coils; E. J. Keller Co., 760 bls.; Order, 590 bls. and 262 coils.

Old Bagging—E. Butterworth & Co., 116 bls.; Castle & Overton, 81 bls.; R. F. Downing & Co., 101 bls.; Overton & Co., 120 bls.; Bank of the Manhattan Co., 170 bls.; E. J. Keller Co., 539 bls.; Order, 10 bls.

Rags—S. Birkenstein & Sons, 279 bls.; Katzenstein & Keene, 199 bls.; Alfred Bloch & Co., 45 bls.; E. Mayer, 341 bls.; Union Waste Co., 8 bls.; American Rag Trading Co., 79 bls.; Darmstadt, Scott & Courtney, 26 bls.; Sterling Mill Supply Co., 58 bls.; Alexander H. Searle, Inc., 133 bls.; W. Lowenthal & Co., 12 bls.; Fritz Stern, 8 bls.; Hill Ingram Co., 20 bls.; J. Cohen & Sons, 4 bls.; H. Burrows, 21 bls.; E. J. Keller Co., 726 bls.; Salomon Bros. & Co., 129 bls.; George W. Millar & Co., 210 bls.; Federal Paper Stock Company, 4 bls.; Castle & Overton, 98 bls.; Corn Exchange Bank, 24 bls.; Philadelphia National Bank, 202 bls.; Chemical National Bank, 418 bls.; State Bank, 16 bls.; Equitable Trust Co., 51 bls.; American Exchange Irving Trust Co., 513 bls.; Chase National Bank, 966 bls.; Manuacturers Trust Co., 5 bls.; Bank of New York & Trust Co., 817 bls.; National City Bank, 63 bls.; Central Mercantile Bank, 246 bls.; W. Schall & Co., 55 bls.; Arrowhead Mills, 118 bls.; Rogers Manufacturing Co., 40 bls.; J. B. Moors & Co., 60 bls.; Amsinck, Sonne & Co., 98 bls.; Kidder Peabody & Co., 112 bls.; C. R. Spence & Co., 488 bls.; U. S. Forwarding Co., 41 bls.; A. W. Fenton, Inc., 693 bls.; Brown Bros. & Co., 71 bls.; United States Lines, 53 bls.; Goldman, Sachs & Co., 89 bls.; American Express Co., 49 bls.; Order, 1,518 bls.

Miscellaneous Paper Stock—Castle & Overton, 306 bls.; E. Butterworth & Co., 145 bls.; J. Cohen & Sons, 50 bls.; Milton Snedeker Corp., 196 bls.; George M. Graves Co., 203 bls.; Equitable Trust Co. 162 bls.; B. D. Kaplan & Co., 89 bls.; Meyers-Lipman Wool Stock Co., 22 bls.; Brown Bros. & Co., 759 bls.; C. R. Spence & Co., 406 bls.; Anchor Line, 32 bls.; Alexander H. Searle, Inc., 581 bls.; J. B. Woodruff, 157 bls.; American Exchange Irving Trust Co., 520 bls.; George W. Millar & Co., 645 bls.; Banca Commerciale Italiana Trust Co., 957 bls.; State Bank, 272 bls.; A. W. Fenton, Inc., 520 bls.; Green, Hamilton & Co., 83 bls.; Darmstadt, Scott & Courtney, 551 bls.; Chase National Bank, 907 bls.; National City Bank, 252 bls.; Victor Galaup, Inc., 1,194 bls.; Interstate Trust Co., 611 bls.; American Wool Stock Co., 42 bls.; Bank of the Manhattan Co., 291 bls.; Daniel M. Hicks, Inc., 146 bls.; American Express Co., 65 bls.; First National Bank of Boston, 226 bls.; Overton & Co., 609 bls.; William Steck & Co., 153 bls.; New York Trust Co., 124 bls.; R. F. Downing & Co., 60 bls.; Fidelity Trust Co., 293 bls.; T. D. Downing & Co., 75 bls.; H. Muehlstein & Co., 236 bls.; Van Oppen & Co., 98 bls.; Philadelphia National Bank, 645 bls.; Robert Bishop Mfg. Co., 176 bls.; Anglo-South American Trust Co., 59 bls.; Railway Supply & Mfg. Co., 90 bls.; E. J. Keller Co., 1,388 bls.; Order, 2,869 bls.

Paper

Imports of paper into the United States in March last were, in point of value, about on a par with the preceding month though slightly greater than in the corresponding month last year. According to official Department of Commerce statistics, paper imports into this country in March were valued at $12,703,930, compared with imports valued at $12,740,217 in the preceding month, and $12,237,774 in March, 1927.

Paper imports during May were fairly large, judging from receipts at the port of New York. Some sizeable lots of printing, wrapping, cigarette and other grades were received, and there were considerable quantities of strawboard imported. Imports of all kinds of paper at the port of New York in May, 1928, these data being taken from manifests of streamers reaching that port during the month, follow:

Printing—B. F. Drakenfeld & Co., 38 pkgs. from Liverpool; Hoboken Trust Co., 8 cs. from Bremen; Perkins-Goodwin Co., 916 reels from Bremen and 570 reels Hamburg; Walker Goulard Plehn Co., 3 bls. from Hamburg and 270 bls. Bremen; Dingelstedt & Co., 14 cs. from Rotterdam; Judson Freight Forwarding Co., 26 cs. from Rotterdam; E. Dietzgen & Co., 317 cs. from Rotterdam and 30 cs. Hamburg; F. Henjes, Jr., 136 reels from Hamburg; New Haven Times-Union, 217 reels and 8 bls. Gothenburg; A. S. Zabriskie, Inc., 60 reels from Bremen; F. F. Bernitz, 61 bls. from Hamburg; Public National Bank, 25 cs. from Marseilles; C. K. MacAlpine & Co., 40 bls. from Gothenburg; Oxford University Press, 4 cs. from Liverpool; Bank of Montreal, 3,994 rolls from Corner Brook; P. C. Zuhlke, 201 cs. from Antwerp; Canfield Paper Co., 111 bls. from Bremen; C. Steiner, 20 cs. from Rotterdam; Merchants Dispatch & Transport Co., 16 cs. from Rotterdam; Guaranty Trust Co., 316 rolls from Gothenburg; Hudson Trading Co., 10 rolls from Oslo and 79 rolls Gothenburg; Martin & Bechtold, 13 cs. from Bremen; Journal of Commerce, 117 reels from Hel-

MITTS & MERRILL

The Mitts & Merrill Shredder will reduce magazines, books, old papers and boxboard, frozen or dried pulp laps, roll and sheet stock in a thoroughly economical manner.

Built in sizes with spouts ranging from 18 to 45 inches wide.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

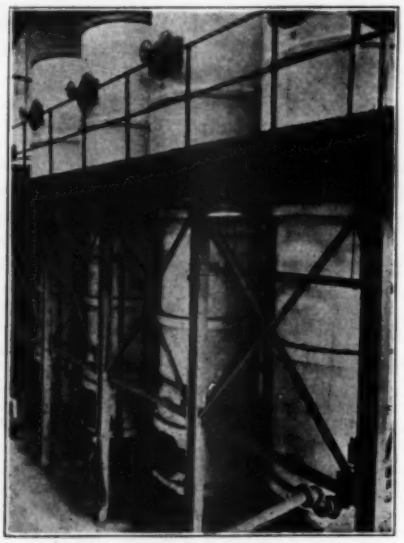
MITTS & MERRILL
1013 Tilden St.
Saginaw, Mich.

Fed by GRAVITY or CONVEYOR

See Pages 372 and 373 in the Paper and Pulp Mill Catalog

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
CHAMPION
FIBRE CO.
Canton, N. C.



NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
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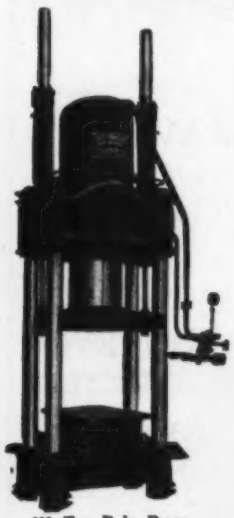
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1928 Paper and Pulp Mill Catalogue



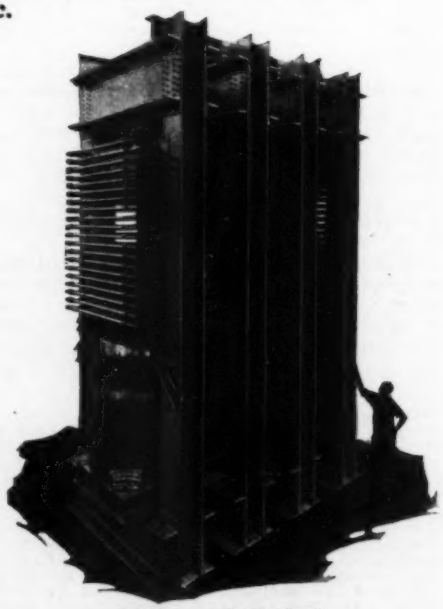
400 Ton Pulp Press

SOUTHWARK

Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

PULP PRESSES
BALING PRESSES
WALL BOARD PRESSES
PULP TRUCKS
HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



2000-ton 12'-6"x4'-6"
20 Opening Wall Board Press

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CHICAGO
343 S. DEARBORN ST.

AKRON
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singfors; H. Reeve Angel & Co., 158 reels from Helsingfors; Keuffel & Esser Co., 68 rolls from Hamburg; Order, 2,919 reels and 100 bls. from Bremen, 217 bls. and 72 rolls Hamburg, and 188 reels Kotka.

Wrapping—Bendix Paper Co., 10 cs. from Hamburg; Manufacturers Trust Co., 37 cs. from Hamburg; Insight Paper Co., 447 bls. from Oslo; Penn Bag Co., 83 reels from Antwerp; Arkell Safety Bag Co., 92 reels from Gothenburg; Crepe Kraft Co., 75 reels from Gothenburg; Borregaard Co., 312 bls. from Gothenburg; Birn & Wachenheim, 10 bls. from Hamburg; C. A. Johnson & Co., 6 reels from Gothenburg; Order, 276 bls. from Antwerp.

Cigarette—DeManduit Paper Corp., 259 cs. from Havre and 428 cs. St. Nazaire; Surbrug Co., 20 cs. from Havre; British-American Tobacco Co., 203 cs. from Havre; Bank of the Manhattan Co., 20 cs. from Lisbon; M. Spiegel & Son, 13 cs. from Genoa; P. J. Schweitzer, Inc., 70 cs. from Marseilles and 8 cs. Havre; Standard Products Corp., 248 cs. from Havre; American Tobacco Co., 1,250 cs. from Bordeaux.

Writing—F. L. Kraemer & Co., 3 cs. from London; A. M. Capens' Sons, 18 bls. from Trieste; Guibont Freres & Co., 25 cs. from Havre; Sternberg & Co., 36 cs. from Marseilles; Gallagher & Ascher, 3 cs. from London; J. E. Bernard & Co., 7 cs. from Southampton; L. Bamberger & Co., 4 cs. from Havre.

Drawing—H. Reeve Angel & Co., 13 cs. from London and 3 cs. Southampton; Keuffel & Esser Co., 52 cs. and 135 rolls from Hamburg and 4 cs. Southampton; C. Manayer, 49 pkgs. from Havre; Favor, Ruhl & Co., 7 cs. from London.

Tissue—F. B. Vandegrift & Co., 10 cs. from Liverpool; G. W. Sheldon & Co., 4 cs. from London; Schenkers, Inc., 9 cs. from Hamburg; Order, 17 cs. from Genoa.

Hanging—C. A. Haynes & Co., 141 bls. from London, 2 bls. Liverpool and 75 bls. Southampton; W. H. S. Lloyd & Co., 31 bls. from Liverpool and 2 bls. London; Atlantic Forwarding Co., 2 cs. from Bremen; R. F. Downing & Co., 8 bls. from London; F. J. Emmerich & Co., 7 bls. from London, 53 bls. Hamburg and 6 bls. Liverpool; W. P. Nelson, 3 cs. from Hamburg; Stern, Stiner & Co., 5 bls. from Hamburg; Globe Shipping Co., 58 bls. from Hamburg; B. Willie, 17 bls. from Hamburg; A. C. Dodman, Jr. Inc., 20 bls. from Liverpool and 6 pkgs. Southampton; F. A. Binder, 20 bls. from Bremen, Schmidt, Pritchard & Co., 9 bls. from Rotterdam; Baldwin Universal Co., 2 cs. from Bremen.

Photo—J. J. Gavin & Co., 12 cs. from Liverpool; Person & Weidhorn, 6 cs. from Hamburg; Globe Shipping Co., 360 cs. from Bremen; J. H. Schroeder Banking Corp., 152 cs. from Bremen; Gerhard & Hey, 3 cs. from London; Gevaert Co. of America, 117 cs. from Antwerp; P. C. Zuhlke, 209 cs. from Antwerp.

Board—Adrian Vuyck, 604 reels from Rotterdam; J. A. Raber, 25 bls. from Gothenburg; Perkins-Goodwin Co., 373 reels from Rotterdam; American Express Co., 145 cs. from Hamburg; Wilkinson Bros. & Co., 64 reels from Gothenburg; O. M. Baxter, Inc. 24 cs. from Gothenburg; Chatham & Phenix National Bank, 37 bls. from Gothenburg; Robert Wilson Paper Corp., 245 rolls from Antwerp and 126 reels Rotterdam; C. H. Powell & Co., 76 bls. from Antwerp and 320 reels Rotterdam; Coty, Inc., 205 cs. from Havre; V. V. Neustadt, 16 cs. from Hamburg; Bank of the United States, 234 reels from Hamburg; New York Corrugated Case Co., 160 reels from Rotterdam; Lagerloef Trading Co., 437 bls. and 22 rolls from Hamburg; Happel & McAvoy, 19 cs. from Hamburg; Premier Flong Co., 54 cs. from Hamburg; Order, 94 bls. from Hamburg.

Filter—H. Reeve Angel & Co., 24 cs. from London and 48 cs. Southampton; C. Sleicher & Scholl Co., 13 cs. from Hamburg; Blackman & Blackman, 10 bls. from Bordeaux; E. Fougera & Co., 80 cs. from Southampton; J. Manheimer, 136 bls. from Southampton; A. Giese & Soh, 3 cs. from Hamburg.

Miscellaneous—C. A. Johnson & Co., 12 bls. from Liverpool; International Forwarding Co., 2 cs. from London, 49 cs. Hamburg and 4 cs. Antwerp; Tice & Lynch, 6 cs. from London; Lunham & Reeve, 2 pkgs. from London; Whitfield Paper Works, 38 cs. from Kobe; J. & H. Berge, 4 cs. from Bristol; T. D. Downing & Co., 6 cs. from Havre; Atlantic Forwarding Co., 34 cs. from Hamburg; P. H. Petry & Co., 62 cs. from Hamburg, 6 cs. Bremen and 11 cs. Rotterdam; International Acceptance Bank, 29 bls. from Hamburg; Brown Bros. & Co., 16 cs. from Hamburg; Keuffel & Esser Co., 109 cs. from Hamburg; Bendix Paper Co., 22 cs. from Hamburg; Whiting-Patterson Co., 31 cs. from Southampton; F. Murray Hill, Inc., 12 cs. from Bremen and 7 cs. Hamburg; B. F. Drakenfeld & Co., 26 cs. from Liverpool; Hensel, Bruckman & Lorbacher, 14 cs. from Havre and 33 cs. Bremen; Japan Paper Co., 2 cs. from Havre and 54 cs. Genoa; R. F. Downing & Co., 29 cs. from Havre; Keller-Dorian Paper Co., 31 cs. from Havre; Coenca-Morrison Co., 12 cs. from Havre; Birn & Wachenheim, 4 cs. from Havre and 49 cs. Antwerp; S. Gilbert, 51 cs. from Bremen; J. R. Livermore & Co., 5 cs. from Genoa; Meadows, Wye & Co., 22 cs. from Rotterdam; J. A. Raber, 182 bls. from Gothenburg; New York Trust Co., 3 cs. from Havre; Perkins-Goodwin Co., 18 cs. from Havre; American Express Co., 44 bls. from Hamburg; American Exchange Irving Trust Co., 27 cs. from Hamburg; Borden & Riley Paper Co., 4 cs. from Antwerp; Banca Commerciale Italian Trust Co., 10 cs. from Hamburg; Gobe Shipping Co., 5 cs. from Havre and 11 cs. Rotterdam; Central Union Trust Co., 42 cs. from Hamburg; Baldwin Universal Co., 10 cs. from Bremen; Judson Freight Forwarding Co., 69 cs. from Rotterdam, 28 cs. Antwerp and 12 cs. Havre; S. Bienfang, 22 cs. from Rotterdam; H. Reeve Angel & Co., 2 cs. from Southampton; E. Dietzgen & Co., 2 cs. from London, 23 cs. Rotterdam and 48 cs. Hamburg; F. C. Strype, 15 cs. from Rotterdam; Tamm & Co., 2 cs. from Rotterdam; Kolesch & Co., 3 cs. from Rotterdam; H. D. Catty & Co., 2 cs. from Rotterdam; Quality Art Novelty Co., 29 pkgs. from Bordeaux; Louis DeJonge Co., 18 cs. from Hamburg; E. M. Sergeant Co., 8 cs. from Gothenburg.

Does your sheet act like a sponge?

On the press does it soak up all the ink in sight, or does it say to the presses "enough, thank you"? Such resistance to printers' ink is possible when "A-Syrup" silicate is used in the beater.

Used with rosin, "A-Syrup" silicate increases the retention of rosin, and thus increases water resistance.

Make your paper a leader. "A-Syrup" silicate will help you feel proud of its printing qualities.

Philadelphia Quartz Co.

General Offices: Philadelphia

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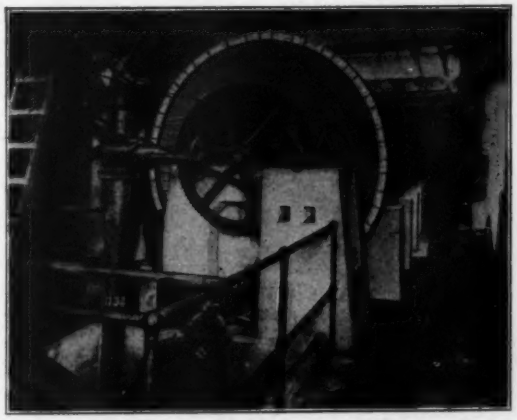
Seven Plants and Dealers in 40 Cities



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

DESIGNERS AND BUILDERS OF

PAPER MAKING **MACHINERY** PAPER CUTTING

PAPER BAG MAKING

THE
SMITH
AND
WINCHESTER
MFG. CO.

ESTABLISHED 1828
AT
SOUTH WINDHAM
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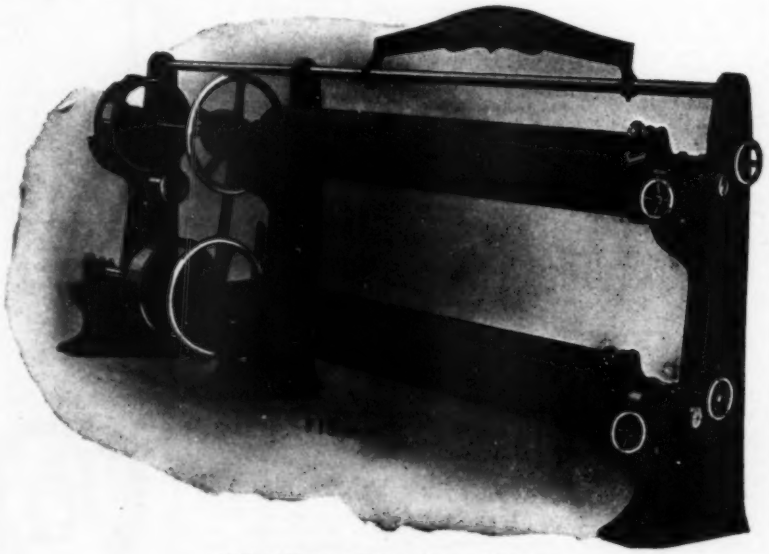
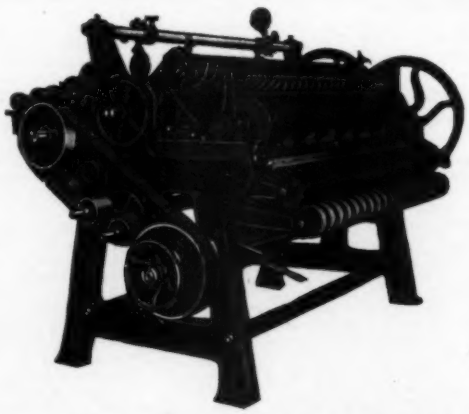


TWO DRUM REEL—Heavy Pattern

Triple Shaft Rapid Winding Toilet Machine

Ball Bearing throughout. Triple shaft adds speed and efficiency. Is an exclusive feature of our machines. Our catalogue contains other designs also complete line of equipment for paper converter.

Hudson-Sharp Machine Co.
GREEN BAY, WISCONSIN
Chicago Office: 574 Wrigley Bldg.



PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

Market Quotations

(*Continued from page* 561)

BONDS	Bid	Asked
St. Regis Paper Co. 6½s, 1929	99	101
St. Regis Paper Co. 6s, 1931	100	101½
St. Anne Paper Co. 6½s, 1953	102¾	104
St. Croix Paper Co. 5s, 1928	99	
St. Helens Pulp & Paper Co. 6½s, 1941	99	
St. Lawrence Paper Mills 6s, 1931	102¼	104
St. Lawrence Pulp & Lumber Co. 6s, 1933	7	9
Spruce Falls Power & Paper Co. 5½s		100
Spanish River Pulp & Paper Co. 6s, 1931	108	
Stevens & Thompson Paper Co. 6s, 1942	95	97
Southern Advance Bag & Paper Co. 6s, 1947	97	
Smith (Howard) Paper Co. 7s, 1941	103	
Smith (Howard) Paper Co. 5½s, 1953		99
Taggart Bros. 6s, 1944	95	100
Tait Paper & Color Industries 6s	88	90
Ticonderoga Pulp & Paper Co. 6s, 1940	100	102
Tonawanda Paper Company 5½s	99	101
United Wall Paper Co. 6s, 1947	96	98
Watab Paper Co. 6½s, 1942	102	104
Whitaker Paper Co. 7s, 1938	108¼	109½
Westfield River Paper Company 7s	89	93
Warren (S. D.) 6s, 1945	102	
Wm. Whitmer Sons—Parsons Pulp & Lumber Co. 8s	15	20
Waterway Paper Products 6s, 1931	101	

STOCKS	Bid	Asked
American Book Co. Common	145	148
American Sales Book Co. Preferred	106	109
American Sales Book Co. Common	79	80
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co. Preferred	90	
Brown Company Preferred	96½	99
British Columbia Pulp & Paper Co. Prefered	69	
British Columbia Pulp & Paper Co. Common	6	9
British Columbia Pulp & Paper Co. Preferred	69	
Brompton ulp & Paper Co. Common	51	53
Canada Paperboard Co. Preferred		94
Champion Fibre Co. Preferred	107½	
Champion Coated Paper Co. Common		125
Champion Coated Paper Co. Preferred	105	107
Chemical Paper Mfg. Co. 1st Preferred	90	
Chillicothe Paper Company Preferred		105
De Jonge (Louis) Co. Preferred	95	97
Dryden Paper Co. Preferred	42	44
Diem & Wing Preferred	92	97
Downington Paper Company Preferred	101	
Donnacona Paper Co. Preferred	103	
Donnacona Paper Co. Common	93	
Eastern Manufacturing Company 1st Preferred	60	65
Eddy Paper Co. Common	30	
Escanaba Paper Company Preferred	40	
Escanaba Paper Company Common	4	
Folding Box Units	30	
Fidalgo Pulp Mfg. Co. Common	75	
Glatfelter Paper Co. Preferred	103	107
Great Northern Paper Company	83	85
Gair (Robt.) Company	15	18
Hawley Paper Co. Preferred	96	
Hammermill Paper Mills Preferred	109	
Holyoke Card & Paper Co. Preferred	170	
Hinde & Dausch Co. Preferred	101½	102½
Hinde & Dausch Co. Common	180	
Indiana Flooring Co. Common		7
International Pulp Co. Preferred	72	
International Textbook Company	32	36
Jessup & Moore Paper Co. 1st Preferred	33	38
Jessup & Moore Paper Co. Common	5	10
Keyes Fibre Co. "A" Common	44	46
Marathon Paper Mills Common	125	
Minnesota & Ontario Paper Co. Preferred	74	78
Missisquoi Pulp & Paper Co. Preferred	92	97
Munising Paper Company Preferred	82	90
Munising Paper Company Common	24½	30
Morris Paper Co. Units	150	
Northern Paper Mills Co.	30	
National Paper & Type Co. Preferred	77	83
Orono Pulp & Paper Co. Common	40	45
Oglesby Paper Company Preferred	101½	
Occident Paper Co. Preferred		15
Oxford Paper Co. Prefered	109½	110½
Oxford Paper Co. Common	180	190
Parker Young Co. Preferred	85	90
Parker Young Co. Common	25	30
Penobscot Chemical Fibre Co. Common	80	
Price Bros. Common	90	
Package Paper & Supply Units	22	
Robertson Paper Co. Preferred	5	
Robertson Paper Co. Common	50c	
Rogers Paper Company	45	50
Southern Paper Co. 2nd Preferred	OW	

TRADE MARK

B

Registered

DIAMOND B SPLICING TISSUE

HIGHEST QUALITY

SPECIALLY MADE FOR THE PAPER TRADE

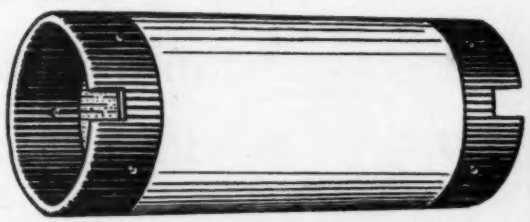
PRICES ON APPLICATION

BEMIS ASSOCIATES INC.

WATERTOWN, MASS.

ELIXMAN PAPER CORE CO., INC.

Corinth, N. Y. U. S. A.



Canadian Elixman Co., Ltd., Hamilton, Ontario

WATERVLIET PAPER COMPANY

WATERVLIET, MICHIGAN

Manufacturers of

Coated Book and Coated Lithograph Papers

The

ST. REGIS PAPER COMPANY

Daily Capacity 525 TONS

Newsprint

Catalog and Directory Papers

Fibre Wrapping Papers

Packers Oiled Manila

Specialties

General Sales Office

15 Broad St., New York

Farmers' Bank Bldg.

Pittsburgh, Pa.

Sorg (Paul) Paper Co. Preferred	100	
Sorg (Paul) Paper Co. Common		BW
St. Regis Paper Co. Preferred	109	110
St. Croix Paper Co. Common	160	
United Wall Paper Co. Preferred	90	95
West Virginia Pulp & Paper Co. Common	59	62
West Virginia Timber Co. Prefered	90	96
West Virginia Timber Co. Preferred	90	96
Watervliet Paper Company	10	20
Watson (H. F.) Paper Co.	125	
Wayagamack Paper Co.	104	108

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 31026—Bank bond paper, watermarked, white and colored. Singapore, Straits Settlements. Purchase and agency desired.

No. 30995—Lithographic paper for covering candy boxes. Montreal, Canada. Purchase desired.

No. 30994—Overissued newspapers. Colombo, Ceylon. Purchase desired.

No. 31025—Paper bag making machinery. Ciudad Juarez, Mexico. Purchase desired.

No. 30967—Rosin. Moji, Japan. Purchase desired.

No. 30952—Caustic soda. Ceuta, Spanish North Africa. Purchase desired.

No. 31137—Paper bags, 1 to 20 pound. Kingston, Jamaica. Sole agency desired.

No. 31154—Buffing paper. Remagen, Germany. Purchase and agency desired.

No. 31065—Newsprint, bond, and wrapping papers. Cairo, Egypt. Agency desired.

No. 31135—Wallpapers. Wellington, New Zealand. Agency and purchase desired.

No. 31121—Wallpaper printing machines. Rome, Italy. Sole agency desired.

No. 31116—Writing paper. Montevideo, Uruguay. Agency desired.

No. 31185—Sulphur, crude and lump. Freiberg, Germany. Purchase desired.

No. 31321—Chrome paper, for label stock and cigar bands. Einhoven, Netherlands. Purchase desired.

No. 31319—Wallpaper of various grades. Nassau, Bahamas. Purchase desired.

No. 31312—Wall and insulating board. Prague, Czechoslavakia. Purchase and agency desired.

Lincoln Electric Co. Awards Prizes

The Lincoln Electric Co., Cleveland, O., conducted a contest which closed December 31, 1927, offering $17,500 in prizes for the best papers on arc welding. These prizes were distributed at the opening session of the spring meeting of the American Society of Mechanical Engineers held at the William Penn Hotel, Pittsburgh, Pa., on May 14th.

The first prize of $10,000 was awarded to James W. Owens, director of welding for the Newport News Shipbuilding and Dry-dock Co., Newport News, Va., who wrote on the subject, "Arc Welding, its Fundamentals and Economics." The paper by Henri Dustin, professor in the Engineering School of the University of Brussels, Belgium, which dealt with the strains set up in welded joints and methods of calculating such strains was given the second prize of $5,000. The third prize of $2,500 went to Commander H. E. Rossell, Construction Corps, U. S. Navy, for his contribution on "Electric Welding of Ships' Bulkheads and Similar Plated Structures."

Paul T. Brady, aged 71, associated with the Westinghouse Electric & Manufacturing Co. for 34 years, and actively engaged in the electrical industry since 1881, died suddenly May 3, 1928, at the home of his son, Arthur J. Brady, in Portland, Oregon. Mr. Brady had been special representative of the Westinghouse Company in New York City since 1907.

LEWELLEN SERVICE—
NATION WIDE

We realize that what you wish to know about the LEWELLEN Variable Speed Transmission, is how it can be made to solve your particular problem. To meet your need, LEWELLEN Manufacturing Company, has established a nation-wide organization of distributors, whose duty and pleasure will be to render you real service, by being able and ready at all times, to help you to select precisely the right type and size LEWELLEN transmissions that will best fill your requirements.

Write or telephone the distributor in your own city, or nearest to you.

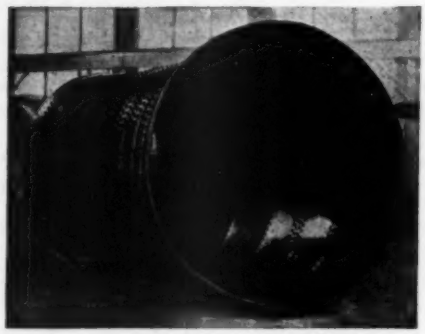
Baltimore, Md.	Aumen Machinery Co.
	L. A. Benson Co.
Birmingham, Ala.	S. L. Morrow.
Boston, Mass.	Boston Gear Works Sales Co.
	Lewis E. Tracy Co.
Buffalo, New York	Buffalo Mill Supply Co.
Chicago, Illinois	Boston Gear Works Sales Co.
	Chicago Pulley & Shafting Co.
Cincinnati, Ohio	L. F. Lewellen.
	Wirthlin-Mann Co.
Cleveland, Ohio	Boston Gear Works Sales Co.
	Cleveland Tool & Supply Co.
Dayton, Ohio	Klinger-Dills Company,
Detroit, Michigan	D. P. Brown & Company,
Los Angeles, Calif.	Chain Belt Company,
Milwaukee, Wis.	American Machinery Co.
Minneapolis, Minn.	F. S. VanBergen.
New York, N. Y.	Boston Gear Works Sales Co.
Norfolk Downs, (Quincy)	Boston Gear Works Sales Co.
Philadelphia, Pa.	Boston Gear Works Sales Co.
	Clinton G. Reed.
Pittsburgh, Pa.	T. L. Rose & Son.
Portland, Oregon	Chain Belt Company,
Providence, R. I.	Gilbert Mill Supply Co.
Rochester, N. Y.	John M. Forster Co.
St. Louis, Mo.	Teuscher Pulley & Belting Co.
Salt Lake, Utah.	The Galigher Company.
San Francisco, Cal.	Chain Belt Company.
Seattle, Washington.	Chain Belt Company.
Syracuse, N. Y.	Syracuse Supply Co.
Utica, N. Y.	J. Shuman Hower.
Worcester, Mass.	Brierly-Lombard Company.
Montreal, P. Q.	Dodge Mfg. Co. of Canada.
Toronto, Ont.	Dodge Mfg. Co. of Canada.
Toronto, Ont.	Reeves Pulley Mfg. Co.

Lewellen Manufacturing Co.
COLUMBUS, INDIANA

LEWELLEN Variable Speed TRANSMISSION

RIVETED STEEL PIPE LINES
PENSTOCKS, FLUMES, Etc.

Biggs steel pipe, penstocks, flumes, stacks and breechings are fabricated with the same high degree of accuracy and painstaking attention to detail that have made Biggs Rotaries and Digesters so favorably known throughout the industry.



Whether you have immediate use for this type of equipment or not, when the need does arise for heavy steel plate work of any kind, you will find this organization fully qualified to serve you in every detail.

THE BIGGS BOILER WORKS COMPANY

General Office and Works: Akron, 20 Ohio

Western Sales Office: 35 S. Dearborn St., Chicago, Ill.

Eastern Sales Office: 300 Madison Ave., New York City

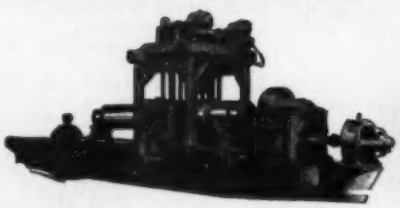
BOILER WORKS The Biggs CO. AKRON OHIO

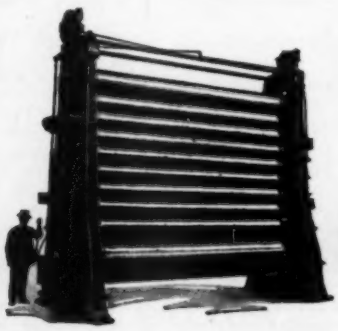
Trade Mark Registered

TANKS AND GENERAL

STEEL PLATE WORK

FARREL





FARREL

FARREL NEW TYPE ROLL GRINDER is electrically driven throughout, and is made in 24", 32", 36" and 42" sizes. All sizes are fitted with Geared Head, New Crowning Device and Automatic Lubrication.

FARREL CALENDERS are equipped with Electric, Hydraulic or Ratchet Lift, all operated from the floor.

FARREL ROLLS are made as large as 298" on the face. Known all over the world.

FARREL INDICATING ROLL CALIPER is extremely accurate. The majority of the parts are made of aluminum alloy, making a light weight instrument. Rolls may be calipered to the end of the face without reversing the caliper.

FARREL-BIRMINGHAM COMPANY INC.,

ANSONIA, CONN.

Successor to: { Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848. / Birmingham Iron Foundry Derby, Conn., Est. 1836.